



Islanders' educational choice: Determinants of the students' performance in the Cambridge International Certificate Exams in the Republic of Maldives



Shoko Yamada ^{*}, Kiyoshi Fujikawa, Krishna P. Pangenji

Graduate School of International Development, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Aichi, Japan

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ABSTRACT

This paper is based on the analysis of a questionnaire survey with teachers and 10th-grade students who took the Cambridge Ordinary Level (O-level) and national secondary school certificate (SSC) examinations in mathematics, English, and Divehi language in the Republic of Maldives. A total of 517 students and 60 subject teachers from eight schools took part in this survey, and the responses from students were matched up with their examination scores in three subjects. The primary objective of this paper is to identify the factors influencing the students' performance in three subjects. Based on that, it considers the implications of employing an international examination system to certify students of the national education system in Maldives. Because of the limited capacity in running a mass education system, this small island state uses an externally-developed examination system for many years. However, the study reveals that the students' performance in O-level exams largely depends on the households' socio-economic conditions and learning environment at home. Factors related to teachers and teaching–learning processes in school do not have much impact. While the government is reforming the curriculum to be more learner-centered and relevant to the national context, the externally-developed exams conflict with such drive for nationalization and widen the gap of educational outcomes among students with and without extra support from the family.

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1. Introduction

The demands for internationally acknowledged examinations for educational qualification are increasing. Among the bodies which provide such testing services are University of Cambridge Local Examinations Syndicate (UCLES), EDEXCEL, and International Baccalaureate. The reliance on these international tests is found not only at the school level, but also at the national level. Not a few national governments certify their students' diplomas with these international tests in major subjects like mathematics and English, instead of developing their own exams and curricula. Maldives is one such country, which made University of Cambridge Local Examinations Syndicate (UCLES) International General Certificate of Secondary Education (IGCSE) exams compulsory to qualify for the secondary school diploma.

For small states like Maldives, developing and administering certificate exams demands a high level of expertise, which is difficult to maintain internally with a limited budget, while the

school age population is also relatively small and scattered. In addition, the domestic labour market is small and people tend to emigrate for work or education, for which the internationally acknowledged educational certification is more desirable than a national one. Therefore, the push to adopt international tests comes from both the governmental and individual perspectives. However, one should not overlook the fundamental difference between adopting international tests to certify the diploma of national education system and the individual decision to sit for the international tests for wider marketability of their educational credentials. It is often said that the examination system is to be systemically linked with curriculum, teacher education, and teaching and learning materials so that educational provision will be efficient and students will learn effectively (Eckstein and Noah, 1993, 19–22; Abraham, 2003, 79; Sultana, 1999, 8). Therefore, the question should be asked whether the certification by international tests is embedded in the education system and contributes to the goals of the national curriculum as a systemic component. This issue also leads to a second question: Does the national adoption of international certification equally affect students who take the exams? If the national curriculum is tied well to the content of international tests and teachers follow such curricular

^{*} Corresponding author. Tel.: +81 90 7541 8024.
E-mail address: syamada@gsid.nagoya-u.ac.jp (S. Yamada).

guidelines, the distribution of exam results should reflect teachers' and schools' capacity to teach and the students' capacity to absorb. However, if schools and teachers do not play important roles in test preparations, the results should be determined by conditions outside of school, such as the socioeconomic background of a household and parental guidance. If the latter applies to cases like Maldives, where students take international tests not as a choice but as a requirement for certification, it may cause serious damage to the equity of education.

Based on these considerations, this paper examines the factors affecting the results of the ordinary level exams by the UCLES-IGCSE, which is customarily called O-level exams¹, in the Republic of Maldives. Tenth-grade students who sat for the exams of mathematics, English as a second language, and Divehi (national) language in October 2011 were asked to complete the questionnaire so that the researchers could analyse their responses in relation to their scores for the said subjects. We analysed 517 students' data from eight schools and 60 subject teachers. Although Divehi is a subject of the national secondary school certificate (SSC) exam, not of IGCSE, it was included in the analysis to compare the score determinants of these different types of exams. The student questionnaire was designed to determine students' socioeconomic backgrounds, family support for learning, perceptions about their school experience, subject learning, and overall learning conditions. The teacher questionnaire was designed to know teachers' backgrounds, methods of teaching, and assessments of their students' performance.

In Maldives, the IGCSE examinations were introduced in 2002 for grade-10 (O-level) and grade-12 (advanced (A)-level) students to qualify for the diploma of lower and upper secondary education. Since the exams' introduction, the number of students who sit for these exams has risen significantly. In 1999, the numbers of students who sat for O-levels were 1197 in the capital of Malé and 821 in the atolls², which increased to 1902 (Malé) and 5235 (atolls) in 2009. This indicates that the opportunity to take the O-level exam has increased dramatically, especially in the atolls (Department of National Planning, 2011). A-level examinations were taken by only 198 students in Malé in 1999, which increased to 709 in Malé and 122 in the atolls in 2007 (World Bank, 2007, 9).

At the same time, the percentage of students passing the O-level and A-level exams dropped from 25.0% to 20.8%, and from 44.4% to 39.4%, respectively, from 1999 to 2005. The pass rate has been increasing in the past few years, although it was as low as 32% for the O-level in 2010. This phenomenon of low certification happened at the same time as the rapid improvement of the transition rate from primary to lower secondary school at 64% in 2001 and 118%³ in 2010 (Ministry of Education, 2009–2012). These data hint that the likelihood of youth to go to secondary school is higher than in earlier generations, but a large part of youth fails to get the lower secondary certificate after five years⁴. Those people who do not pass

O-level exams will not reach the stage to sit for A-level exams. In this sense, the low pass rate for the O-level exams is a more fundamental issue for the expanded Maldivian education system than that of the A-level, which serves a much smaller population.

Through the investigation of the contributing factors to outcomes in the lower secondary certification examinations, this paper highlights the following issues: First and most directly, it answers the question that occupies the minds of educational administrators as to what impedes Maldivian 10th graders from passing O-level examinations at higher rates. Second, it investigates the implications of employing an international examination system to certify students of the national education system in this small island nation. Maldivian reliance on the international examinations would provide insights into the decision made by the government to educate its citizens within its own limited capacity. It would also indicate how parents and students respond to the opportunities of education.

2. Country context

Maldives is a small country southwest of Sri Lanka, with a population of 330,000, consisting of 26 atolls with 200 inhabited islands. The population is scattered across islands, and internal migration progresses at a rapid pace. According to the national census in 2006, between 2000 and 2006, the population grew in Malé at the rate of 5.59 and in the category of resorts and industrial islands at 1.37, while remote islands are losing population to a large extent (Ministry of Planning and National Development, 2006). Of the population, 65% is employed in the service sector, a large part in tourism. Tourism is Maldives's largest economic activity and accounted for 36% of GDP in 2010 and more than 60% of foreign exchange receipts. Fishing traditionally has been a major sector employing a large amount of the population, but the fish catch has dropped sharply in recent years and the income from this industry constitutes only 1% of the total GDP (World Bank, 2011, 1; 2012, 2).

Regarding education, Maldivians had a traditional system of religious schooling for hundreds of years. While the Maldives was a British protectorate between 1887 and 1965, there were a small number of Western-style schools with English media in the capital, Malé. As Mohamed and Ahmed (1998) state, these schools were established to prepare individuals who would receive training overseas so as to contribute to national development. Given such an objective, the public school system in Maldives followed the British model in terms of curriculum and methods of instruction from the beginning (Mohamed and Ahmed, 1998, 91–92). A major change occurred in 1978, when schools were unified under one national education system in which schooling in the Maldives was structured along five-year primary, two-year middle school, three-year junior secondary, and two-year senior secondary studies. The elitist nature of Maldivian education, with limited access, started to change. In 1979, there were 2690 students in government schools, out of which only 59 were in atolls outside of Malé. Within one year, enrolment in the atolls increased more than 60 times (3645) (Maldives National Commission for UNESCO, 1986)⁵. For the first time in Maldivian education history, London-based EDEXCEL general certificate of education (GCE) O-level and A-level examinations were required for students to finish junior secondary and senior secondary. The first national curriculum introduced in 1984 was also designed around the EDEXCEL O-level and A-level examinations, except for a few subjects whose curricula are developed locally, such as Islamic studies, Divehi language, and fisheries science (International Bureau of Education UNESCO, 2011, 3–4)⁶.

¹ The International General Certificate of Secondary Education (IGCSE) is a package of educational programs and a certificate examination provided by the University of Cambridge Local Examinations Syndicate (UCLES) for learners outside of the United Kingdom. In Maldives, the government adopted IGCSE lower secondary school curricula and exams for mathematics, English as a second language, and geography. Aside from these IGCSE subjects and three national certification subjects – Divehi language, Islamic studies, and Arabic – the government uses General Certificate of Secondary Education (GCSE) O-level exams for assessment and certification. Since IGCSE and GCSE are both provided by UCLES, people customarily call them all O-level curricula and exams.

² Maldives has 20 atolls as administrative units outside of capital island Malé.

³ The transition rate can exceed 100% when the students who completed primary education in other years are included in the total number of students promoted to secondary school, while the modulus for calculation is the number of students who completed prima.

⁴ In Maldives, the education system consists of five-year primary, five-year lower secondary, and two-year higher secondary education. O-level exams are required to acquire the lower secondary certificate, and A-level exams are required for the higher second.

⁵ The enrolment listed here includes the total of students at different grades between preschool and grade 12.

⁶ Fishery science was later included in the O-level subjects in response to the needs of Maldives and other island countries.

In 1995, primary net enrolment was already 100%, but access to secondary education was still very narrow. Out of the total enrolment (39,032) in government schools, junior and senior secondary school enrolment comprised only 11% (4418). Narrow access to the secondary level was more serious in private schools (6%), and there was no private senior secondary school (, 91; , 3). Based on these data, one can say that taking O-level and A-level examinations was a phenomenon of a small group of elite secondary school students until the 1990s.

In 2002, the international examinations taken by Maldivian students were changed from EDEXCEL to UCLES-IGCSE and GCE. However, the fact that Maldivian secondary schools teach based on the British O-level and A-level curricula and certify students with these examinations has been there from the beginning of this country's national education system. What has changed is the number of students who sit for these examinations. As we mentioned earlier, the transition rate from primary to secondary has increased rapidly since 2000. The Third Education and Training Project, financed by the World Bank, raised equitable access to and quality of secondary education as objectives and invested in the construction of secondary schools in the atolls (World Bank, 2007, 3–9). The quantitative target was hit relatively well, as the net enrolment rate of lower secondary education reached 84% in 2010 (Ministry of Education, 2011). However, the answer to the question of whether students are learning well would still not be positive, given the O-level pass rate of 32% (Ministry of Education, 2010).

3. Education in small states and its relation to the examinations

Based on the consideration that the certification of students is an integral part of the national education system, it may seem more natural to have national certificate examinations than to adopt externally developed ones. However, not a few national governments and schools certify their students' diplomas with international examinations. A large part of these are governments of small and developing states.

According to a series of studies on educational administration in small states of the British Commonwealth, the reasons for the small states' reliance on external examinations can be summarized as follows. First, they tend not to have enough personnel and resources and end up having an incomplete set of functions for a national education system (Crossley and Holmes, 1999, 2–8; Bray and Steward, 1998, 1–5; Bray, 1991, 88–89; Bray and Khadeeja, 2001, 233, 243). As for the examinations, they require a great deal of expertise and manpower to design, to set papers, to mark, and to evaluate, which often is lacking in small states (Sultana, 1999, 7). Second, the international certification carries prestige and allows access to post-compulsory education and employment overseas, while opportunities within small domestic labour markets tend to be limited (Sultana, 1999, 8; Abraham, 2003, 73; Bray, 1991, 89; Raban, 2008, 5). People in small states are more likely to emigrate for work or education, and there often arises the question of whether national certificates would have equal levels of acceptance internationally. Therefore, even when the government attempts to develop its own national examination, parents – particularly those of the middle or upper classes – sometimes resist such initiatives (Lowe, 1999, 326). Also, people may consider that the examination administered and marked overseas can be more reliable and valid. In small countries, where everyone knows each other, people tend to be sceptical about the fairness of the examination process (Sultana, 1999, 6–7; Raban, 2008, 6). As such, in the cases wherein parents are generally positive about the effects of international examinations and their accompanying curriculum, their attention is paid to the utilitarian aspects of international certifications rather than ideological or moral aspects.

On the other hand, a reliance on external examination would also mean a threat to the national identity, which is largely formed at the site of education. There are cases, therefore, in which concern for national sovereignty and international subordination outweigh the merits of international examination and hesitance to burden a government with limited capacity. For example, in Zimbabwe, shortly after independence in 1980, the government started the localization of the examination system, replacing exams provided by UCLES with those by the Zimbabwe School Examinations Council. After 10 years' strenuous effort of localization (1984–1994), however, students' pass rate was as low as 16% in some subjects (Abraham, 2003, 76, 80), and the system's deficiency caused by the lack of human and physical resources was serious (Musarurwa and Chimhenga, 2011, 174). Similar discussion about localization was also heard in the postcolonial process of establishing the West African Examination Council (Dillard, 2003, 419–25). Distrust in the metropolitan examination systems for imposing second-class education on colonial subjects sometimes leads to a determination to localize the certificate examinations beyond any consideration about the capacity for implementation or utilities of the exams.

Putting aside the postcolonial sentiment, how to balance the national aspects of the education system and the wider marketability of the educational certificate is a challenge in any state that adopts external examination systems (Bray and Steward, 1998, 1–14). The Maldivian government is in the process of developing the National Curriculum Framework, which overarches not only subjects certified by national exams such as Divehi and Islamic studies but also O-level subjects. Among eight basic principles of the framework, one can find Islam, identity and culture, or relevance to the environment, which seems to be closely linked with the social and cultural context of Maldives (Ministry of Education, 2013). It is yet to be known how the O-level syllabus will be aligned to the National Curriculum Framework or vice versa.

Last, it should be pointed out that the issue of balancing the national and the international certification does not arise when the certificate examinations are adopted at the school or individual level instead of the national level. Governmental commitment typically happens with British certification bodies such as UCLES, EDEXCEL, and the University of London Examinations and Assessment Council, whose international expansion has been based on the historical relationships in the former British Empire (Raban, 2008, 106–107). There are certifications such as the international baccalaureate (IB), which is rapidly gaining popularity among an internationally mobile population. This population values the portability of the educational certificate, and IB is used in an increasing number of international schools across the world (Hayden and Wong, 1997, 349; Lowe, 1999, 318–19). IB does not market itself through national governments but contacts schools directly (Tristan, 2011). International certifications like IB are more consumer goods for individuals who are willing to pay for the passport for international upward mobility. On the other hand, the adoption of O-level and A-level exams to the national education system is a formal decision of a society, which is administered by the state bureaucracy.

4. Studies on determining factors of educational attainment

There are abundant studies that try to identify the key factors contributing to the differences in the educational attainment measured by the exam scores, although the ones focusing on O-level and A-level exams outside of the United Kingdom are limited. Most of the studies on this topic focus on compulsory education instead of secondary.

Many scholars find the effects of households' socioeconomic background, namely, parental education, occupational prestige, and other indicators of home circumstances, on children's

academic performance larger than the effects of school and teacher quality (Coleman et al., 1966; Chudgar and Shafiq, 2010). Other scholars claim that school factors such as quality of facilities, quality of teachers, and type of schools significantly determine the level of students' outcomes particularly in the context of developing countries (Heyneman and Loxley, 1983; Jimenez et al., 1991). Heyneman and Loxley argue that the lower the income of the country, the weaker the influence of the social status of the students. Conversely, the effect of school and teacher quality on academic achievement is greater in low-income countries. Other researchers highlight the influence of students' individual attributes such as gender (Chapman, 1981; Beutel and Axinn, 2002) or birth order (Blake, 1989; Steelman et al., 2002). In countries that have lower enrolment rates, selectivity bias towards wealthier urban households and male children tends to be observed more often than in other cases. Still, there is no conclusive picture regarding the factors affecting educational attainment, which largely depend on the context.

Regarding the O-level examinations, Bohlol and Anwar (2011) have conducted a comparative study of the impact of school conditions and teaching on the scores of students in GCE O-level and national SSC English exams in Pakistan. In this case, however, the schools that use GCE O-level exams are all selective elite schools, which total only 180, compared to 4637 SSC schools. Naturally, the result shows the lower performance of SSC schools, which is significantly related to teachers' lack of capacity, shortage of facilities, and shortage of teaching and learning materials. There are scholars who point out the elitist nature of international examinations (e.g., Lowe, 1999, 317). However, such statements are often made in contexts wherein access to the international exams is limited because of (1) low enrolment at the secondary school level, (2) limitation of the number of schools that provide the opportunity to sit for the international exams, or (3) the decision to access the international exams being left in the hands of parents. In the case of Maldives, none of these conditions applies because the O-level exams and their curricula are officially adopted at the secondary schools throughout the country and access to lower secondary education has expanded to a great extent in the past couple of decades. In general, it is difficult to find studies on determinants of O-level exam outcomes where the exam is conducted with the mass of students – like in Maldives – instead of with small elite groups.

5. Research outline

5.1. Methodologies

To investigate the factors determining students' performance on the 10th-grade certificate examinations, we conducted a questionnaire survey with students and teachers. Students' questionnaire responses were matched up with their scores in mathematics, English as a second language, and Divehi language, respectively, so as to see the relationship between questionnaire items and exam scores.

The data were handled anonymously. Although Divehi is a subject of a national SSC exam, not of an IGCSE O-level, it was included in the analysis to compare the score determinants of these different types of exams. A small group of students were scored as 'unqualified,' including 26 examinees (5%) for English and 41 (7.9%) for mathematics. Students who were absent or whose scores could not be matched with their questionnaires totalled 4 (.8%) for Divehi and English and 17 (3.3%) for mathematics.

The student questionnaire was designed to determine students' socioeconomic backgrounds, family support for learning, perceptions about their school experience, subject learning, and overall learning conditions. The teacher questionnaire was designed to know teachers' backgrounds, methods of teaching, and assessment of their students' performance.

Two levels of data analysis were carried out. First, descriptive statistics and Pearson's correlations were examined on the major variables from teachers' and students' questionnaires, together with the students' scores on the examinations for three subjects. This first stage of the analysis gave authors a rough picture of the issues related to the students' performance in these three subjects, which became the basis of the next stage of the analysis. Second, simple linear regression was run for scores in three subjects, respectively, in which the scores were made dependent variables and explanatory variables are taken from the households, students, and school factors.

5.2. Sample population

Questionnaires were completed by 517 students and 60 teachers who teach mathematics, English as a second language, and Divehi in eight schools. Eight schools were selected in consultation with the Ministry of Education and with the feasibility of questionnaire administration. The researchers could not visit a few schools in the atolls themselves and trusted government officials to conduct administration on their behalf. Those who administered the questionnaire were given instruction by the authors about data collection methods, which included (1) to read out the questionnaire questions one by one; (2) to wait until all students in the classroom finish before moving to the next question; (2) not to suggest specific answers to be chosen. Table 1 shows the characteristics of the sample students. Student samples represent both sexes almost equally, where females constitute 54% of the total. At the same time, because of the difficulty of accessing distant atolls, the sample is biased towards Malé, with 72.5% of the sample taken from five schools in Malé. This bias has to be kept in mind, although in reality, nearly one-third of all lower secondary students (28.3%) are concentrated in Malé (Ministry of Education 2012).

Regarding the sample teachers, it is worth noting that nearly half of them are expatriates (46.7%) (Table 2). Tables 2–4 indicate that nearly 70% of the teachers have bachelor's or masters' degrees. At the same time, the level of degree is significantly related to the teachers' countries of origin. Among the expatriate teachers, 60.7% hold master's degrees and 28.6% hold bachelor's degrees. On the other hand, only one-quarter (25.4%) of local teachers have bachelor's degrees and none have master's degrees. Overall, expatriate teachers have higher levels of pre-service education and tend to be older. It also should be pointed out that most of the expatriate teachers (89.3%) teach O-level subjects, namely, English or mathematics. On the other hand, local teachers represent three subjects in a more balanced manner: 43.8% mathematics, 21.9% English, and 34.4% Divehi.

6. Findings

6.1. Characteristics of the score distributions in three subjects

The distribution of scores demonstrates different patterns for the O-level subjects (mathematics and English as a second

Table 1
Demography of sample students by the location of school and sex.

School number	Atolls	Girls	Boys	Total
1	Malé	96	0	96
2	Malé	0	83	83
3	Malé	50	48	98
4	Malé	21	19	40
5	Malé	30	28	58
Malé total		197	178	375
6	Haa Dhaallu	63	47	110
7	Alifu Dhaalu	16	11	27
8	Alifu Dhaalu	5	0	5
Atolls total		84	58	142
Grand total		478	414	892

Table 2
Demography of sample teachers.

	Number	Percentage
2-1: Teachers by subject		
Divehi	14	23.3
English	24	40.0
Math	22	36.7
2-2: Teachers by sex		
Male	24	40.0
Female	36	60.0
Total	60	100.0
2-3: Teachers by origin		
Expatriate	28	46.7
Local	32	53.3
2-4: Teachers by qualification		
Advanced certificate	9	15.0
Diploma	10	16.7
Bachelor's degree	23	38.3
Master's degree	17	28.3
Total	60	100.0

language) and the SSC subject (Divehi). The mean scores were 60.67, 61.85, and 69.04 for mathematics, English, and Divehi, respectively. This indicates that the average scores for math and English are close to one another and around 60% correct marks. Divehi, on the other hand, averages near 70%. The standard deviations also divide the two groups; they are 22.47, 22.82, and 10.43 for mathematics, English, and Divehi, respectively. Combining these data, one can say that on average, students perform a little better in Divehi than in mathematics and English (O-level subjects). Also, the difference of scores between high performers and low performers is narrower in Divehi, at about a 10-point interval, while in mathematics and English, the deviations are as wide as 22 points.

To understand the mutual relationships among the scores of the three subjects, we have analysed the statistical correlations among them. As Table 3 indicates, scores in the three subjects are significantly related to each other, which means that the ones who do well in one subject are likely to do well in the other subjects also. Correlation is particularly significant between English and mathematics (.560 Pearson's correlation coefficient). The location of the school, whether it is in Malé or in an atoll, matters a lot to the exam results. In general, high performers are more likely to be in Malé. This tendency is strongest in mathematics, with a .510 correlation coefficient, followed by English (.294) and then by Divehi (.124). Girls significantly outperform boys in Divehi (.210), although in the other two subjects the sex differences are not so substantial.

Overall, these indicators hint at the line segregating the O-level subjects and Divehi. Although the pattern of Divehi scores cannot be considered to represent all SSC subjects, one can safely say that

O-level subjects are different from subjects like Divehi, which students have more chance to be exposed to in their daily lives and acquire naturally. The scores for the two O-level subjects are more strongly related to each other than to the Divehi score. While there is a clear female bias in the performance of Divehi, the influence of the students' sex is not found in mathematics and English. Further, the factor of school location affects the mathematics score most, followed by English. This location factor may not be strong enough evidence to be employed, given that the majority of the sample students are in Malé. Still, it would be worth considering what this urban factor, which affects the O-level subjects more strongly than the subject of Divehi, could actually represent. What causes the differences in the pattern between these two groups of subjects? Are they factors concerning schools, teachers, households, or students themselves?

6.2. Limited influence from school and teacher

As mentioned earlier, the questionnaires for teachers and students were designed to determine various factors, in addition to demographic information such as age, sex, parental occupation, parental education, location of school. Regarding school and teacher, data were obtained on the availability of textbooks, supplementary books, exercise books, preparatory lessons for the exams, frequency of homework, teachers' strategy of evaluating homework, and school facilities and equipment. As for family support and students' characteristics, in the student questionnaire, we asked students' perceptions about parental support, their interest in learning each subject, teachers' way of teaching, school environment, and students' future career.

By design, therefore, the research should have been able to specify the effective pedagogy and interventions that the government can strengthen and replicate in other schools. However, it turned out that there are not many factors on the side of educational provision – namely, school and teacher – which demonstrated statistical significance. According to the analysis of variance (ANOVA) by school, the exam scores of three subjects are significantly inter-school variances for both O-level subjects and Divehi ($F = 40.565$; 11.048; 5.045 for Math, English, and Divehi, respectively; $p < .00$). Still, the factors which cause such variances could not be found much on the side of schools and teachers in the authors' study.

Since there is no information to specify the identity of teachers who taught the respective student respondents, it is not possible to directly link the results of the teachers' questionnaire with individual students' scores. Instead, the authors calculated the average scores for each subject for each school, and examined the correlation between average scores and the averages of key variables from the teachers' questionnaire at the school-level. According to this analysis, it turned out that teachers' age and, correspondingly, their years of experience are the only variables which are significantly related to students' exam scores. In addition, the strong correlations of teachers' years of experience were seen only with scores in mathematics and English (.712 and

Table 3
Correlations among grades in three subjects.

		Divehi marks	Math marks	English marks	Location of school	Sex of student
Divehi marks	Pearson correlation	1	.294**	.307**	.124**	-.210**
	Sig. (2-tailed)		.000	.000	.005	.000
Math marks	Pearson correlation	.294**	1	.560**	.510**	.054
	Sig. (2-tailed)	.000		.000	.000	.219
English marks	Pearson correlation	.307**	.560**	1	.294**	-.002
	Sig. (2-tailed)	.000	.000		.000	.966

** Correlation is significant at the .01 level (2-tailed).

Location of school: 1 if the school is in male; 0 otherwise. Sex of students: 1 if the student is boy; 0 if the student is girl.

.741; $p < .05$). There was no strong correlation between the former and Divehi scores. Table 4 supports the finding that not many factors related to school and teachers influence the exam scores. In this table, the authors examined the correlation among variables from the teachers' questionnaire, this time not aggregated at the level of school but of individual sample. The shaded areas show the variables whose correlations were significant. Senior teachers with longer experience tend to be in the schools in the capital city Malé, particularly in mathematics. Naturally, English teachers are more likely to be expatriates, while the opposite applies to Divehi teachers.

Towards the right end of Table 4, the authors also included the clusters of variables they obtained through the factor analysis of questionnaire items regarding teachers' perceptions about exam supports and teaching methods. Although many questions were asked about teaching methods, preparation, and source of support for students to learn, these issues did not demonstrate any significance except for scattered places which seem not to have any regularity. The only dim pattern which the authors may need to mention is that teachers in Malé tend to count on parental support more than those on other atolls. They also use conventional teaching methods more than innovative methods such as learner-centred methods or activities in small groups. In sum, what matters more is not innovation but experience with conventional methods, regardless of the Maldivian Ministry of Education's attempts to revise the curriculum to encourage teachers to adopt more learner-centred approaches.

As the next step of the analysis, simple linear regression was employed to identify the factors explaining the differences in pupils' learning achievement. The analysis was conducted for the three subjects separately, while explanatory variables used for modelling were kept constant for the three subjects.

After eliminating variables which did not demonstrate significant effects on dependent variables, the authors tested three models for each subject (Table 5). The first model was run with six variables focusing on socioeconomic characteristics of students. As the six variables for the household's socioeconomic characteristics, we included (1)–(4) parents' education and occupation, (5) family size, and (6) possession of a computer. Since it was difficult to find out the total amount of income in cash value from students, we asked about the possession of several durable goods at home, such as a car, a motorbike, a boat, and refrigerators. Among them, the possession of a computer demonstrated the clearest influence on students' performance in some subjects. For the second model, in

addition to the variables used for the first model, we included seven variables for student characteristics and home environment, namely: (1) location of the school, (2) sex of students, (3) frequency of grade repetition, (4) hours for playing, (5) hours of study at home, (6) hours to help with housework, and (7) parental support for homework. The third model then added another group of variables which related to school and teaching–learning materials. Although most of the variables concerning teachers and teaching–learning processes were eliminated for lack of significance, we tried to see the effects of some scholastic factors as much as possible. The variables added for this third model were: (1) and (2) school type (single-sex or co-educational school), (3) number of textbooks, (4) number of exercise book, and (5) number of exam preparatory books which the student possessed for the respective subjects.

6.3. Household and student factors

The results of simple linear regression for three subjects are presented in Table 5. The only variable which consistently demonstrated significance across three subjects was the hours spent on housework. The regression coefficients for Model III of the respective subjects were -3.763 ($p < .005$), -4.412 ($p < .005$), and -2.127 ($p < .005$). Since the coefficients had negative values, it means that the less time students spent on housework, the higher their test scores were. The hypothesis is that the less time students spend on work, the more time there would be for study. This hypothesis applies to the mathematics and English very clearly. Students' time studying demonstrated a strong positive correlation for mathematics (3.03 ; $p < .005$) and English (3.503 ; $p < .005$). However, such was not the case for Divehi. Although hours of housework negatively correlated with the test results, study hours did not demonstrate any significant effect. The location of school in Malé and frequency of grade repetition also affected achievement in three subjects but not very clearly in the case of Divehi.

In general, it is difficult to see any clear picture about the determinants of Divehi exam scores except for the hours spent on housework and the sex of students (-4.565 ; $p < .005$). It is a unique feature found in Divehi achievement that the gender effect is very strong in this subject, where girls do better than boys. Probably girls acquire proficiency in their mother tongue earlier than boys, which is beyond the scope of this paper to prove. The variables concerning the socioeconomic backgrounds of households do not affect Divehi scores, in contrast to mathematics and

Table 4
Correlation among variables on teachers' demographics and perceptions.

		Schools in male or not	Sex of teacher	Age of teacher	Years in teaching profession	Expatriate or not	Perception of the support for students to prepare for the exams		Teaching methods most often used			
							School support+ Students' self-motivation	Parental support	Conventional	Test preparation	Learner centered	Small group
Schools in male or not	Pearson correlation	1	.072	.312*	.290*	-.047	-.065	.331*	.271*	.048	-.033	.067
	Sig. (2-tailed)		.584	.016	.029	.720	.633	.012	.039	.721	.808	.618
Divehi teachers or others	Pearson correlation	.139	.129	.233	.159	-.279*	-.288*	.064	-.173	-.212	-.224	.128
	Sig. (2-tailed)	.288	.327	.075	.236	.031	.030	.634	.194	.111	.091	.337
English teachers or others	Pearson correlation	-.072	-.167	.235	.174	.396**	.204	.222	.061	.195	-.005	.059
	Sig. (2-tailed)	.584	.203	.073	.195	.002	.129	.098	.647	.142	.970	.659
Math teachers or others	Pearson correlation	.049	.056	.448**	.323*	.157	.052	.281*	.087	-.015	.198	-.170
	Sig. (2-tailed)	.711	.668	.000	.014	.231	.702	.034	.517	.913	.137	.202

Note: * and ** indicate the statistical significance at the 5% and 1% levels, respectively.

Table 5
Determinants of scores in the examinations for Mathematics, English, and Divehi.

Dependent variables	Mathematics			English			Divehi		
	Model I	Model II	Model III	Model I	Model II	Model III	Model I	Model II	Model III
Constant	49.683 (12.284)	35.387 (4.848)	46.290 (5.174)	60.199 (14.033)	50.390 (6.636)	50.969 (5.399)	70.214 (33.983)	70.840 (19.128)	71.642 (15.152)
<i>Independent variables</i>									
Father's occupation (1 = office employee)	5.346** (2.670)	2.931 (1.257)	1.664 (.726)	2.733 (1.287)	3.024 (1.247)	2.259 (.920)	-1.086 (1.061)	.089 (.075)	-.203 (.168)
Mother's occupation (1 = office employee)	3.124 (1.287)	3.672 (1.301)	3.509 (1.280)	4.738 (1.840)	3.980 (1.356)	4.741 (1.605)	-.263 (.212)	.677 (.473)	.802 (.549)
Family size	-1.197*** (3.082)	-1.041* (2.113)	-.751 (1.546)	-1.313** (3.188)	-.729 (1.422)	-.310 (.597)	-.253 (1.277)	-.023 (.094)	.088 (.343)
Possession of computer (1 = yes)	12.909*** (4.354)	12.383*** (3.556)	10.512*** (3.076)	7.372* (2.344)	3.480 (.961)	2.352 (.646)	1.484 (.980)	1.812 (1.026)	1.699 (.945)
Father's education (1 = secondary and above)	5.434* (2.272)	-1.095 (.371)	-1.561 (.541)	4.304 (1.697)	-.409 (.133)	-.069 (.022)	.877 (.717)	-1.028 (.687)	-1.354 (.888)
Mother's education (1 = secondary and above)	6.125* (2.418)	2.275 (.743)	3.350 (1.097)	.205 (.076)	.040 (.012)	.094 (.028)	-1.780 (1.376)	-1.184 (.762)	-2.245 (1.376)
School location (1 = male)		21.610*** (8.082)	17.192*** (5.711)		13.053*** (4.692)	12.181*** (3.809)		3.588** (2.645)	.973 (.626)
Sex of student (1 = male)		.337 (.146)	1.740 (.605)		1.426 (.593)	2.530 (.833)		-5.342*** (4.555)	-4.565*** (3.027)
Frequency of grade repetition		-5.804*** (4.345)	-4.769*** (3.606)		-5.049 (3.633)	-4.799*** (3.153)		-1.367* (2.018)	-1.090 (1.551)
Time for play (h/day)		1.525 (1.627)	1.553 (1.689)		1.800 (1.846)	2.110* (2.162)		.704 (1.480)	.778 (1.595)
Time for study (h/day)		1.820 (1.895)	3.030*** (3.022)		3.158*** (3.160)	3.503*** (3.283)		.182 (.374)	.555 (1.054)
Time for housework (h/day)		-2.798* (2.589)	-3.763*** (3.469)		-3.981*** (3.541)	-4.412*** (3.76)		-1.993*** (3.634)	-2.127*** (3.670)
Parental support for homework (scale 15)		3.172*** (4.303)	2.020** (2.737)		1.973* (2.573)	1.496 (1.886)		.332 (.888)	.107 (.275)
Girls school (1 = yes)			1.755 (.329)			1.920 (.339)			1.838 (.654)
Co-educational school (1 = yes)			-9.069* (2.244)			-3.253 (.755)			-4.022 (1.858)
Number of textbooks for this subject			-2.134* (2.246)			-1.129 (.110)			1.176* (2.081)
Number of exercise books for this subject			.198 (.288)			1.130 (1.230)			-.082 (.188)
Number of exam preparatory books for this subject			.654 (.796)			-1.656 (1.585)			.157 (.334)
R ²	.185	.440	.499	.084	.283	.320	.011	.160	.200
Adjusted R ²	.174	.412	.463	.071	.249	.271	-.002	.119	.144

Note: Numbers in parentheses are *t*-statistics and *, **, and *** indicate the statistical significance at the 5%, 1%, and .5% levels, respectively. Source: authors' survey data.

English. The regression models for Divehi scores had R squares lower than .2, which indicated that the models did not fit well and could not explain the variance of Divehi scores at a very high level. Still, these data hint at a profile of students who score high in Divehi: girls whose parents do not make them do so much housework. Whether parents are educated or have better incomes does not influence the students' level of command of their mother tongue in writing, reading, and comprehension.

On the other hand, mathematics and English scores are deeply related to socioeconomic conditions and students' lives at home. This tendency is particularly clear in the case of mathematics. Those students from families with more durable goods (represented by the computer) do better in mathematics (10.512; $p < .005$). Family size also matters, although the significance levels are not consistently high across the three models. This suggests that households with many members tend to be unable to allocate resources for the education of one child. They may also tend to rely on child labour for household chores. Also, a life pattern and living environment that is supportive of learning appears to be a significant contributor to good performance in O-level subjects. Students living in Malé do well in both mathematics (17.192; $p < .005$) and English (12.181; $p < .005$). Hours of study demonstrated strong positive correlations, while, as discussed earlier, the hours of housework and the frequency of grade repetition had strong negative correlations. The regression coefficients for grade repetition were -4.769 ($p < .005$) for mathematics and -4.799 ($p < .005$) for English, and hours spent for studying these subjects were 3.030 ($p < .005$) and 3.503 ($p < .005$). The assistance by parents for homework was also significant, particularly for mathematics (2.020; $p < .010$).

In sum, home study seems to be quite significant for the O-level subjects, and it accompanies student demands for parents' help. It cannot be specified from the questionnaire what kinds of help parents are providing. Therefore, the help may not necessarily involve tutorials on subject contents, which require a high level of intellectual capacity of the parents. However, the strong influence of the socioeconomic conditions of a household on mathematics suggests that the students' performance in this subject is associated with relatively higher income and educational levels of parents, which is less apparent in the English scores. The achievements in both O-level subjects are affected by household factors and conditions outside of school. However, while English achievement seems to be linked to enabling conditions in a broad sense, with more time for studying and parental encouragement, mathematics requires higher socioeconomic status and material support from the households. Although available data do not provide means for further investigation, to outperform in mathematics, students may access extra professional services such as tutors or preparatory school, for which parents pay. On the other hand, English may be a subject that does not require additional formal training as long as the home environment is enabling and parents help with self-learning.

Last, to find the effect of scholastic factors, the Model III for respective subjects included variables on school type and possession of teaching–learning materials. School type seems to have a small effect, with a marginal positive effect for single sex schools. However, given that single sex schools tend to have higher academic records, it is difficult to prove the differential effects of learning environment by type of schools. Variables of teaching–learning materials show conflicting pictures. Students who performed higher in mathematics had fewer textbooks (-2.134 ; $p < .05$), while in Divehi, students with more textbooks did well (1.176; $p < .05$). The addition of scholastic variables did not increase the R squares for the three subjects much, which indicated the limited explanatory capacities of these variables.

Overall, through this research, it was difficult to find any clear pattern in the students' performance in Divehi test, while elements which contribute to the scores in O-level subjects are identified if not in the expected manner. It is unfortunate that the factors related to school and teacher were found not contributing much. Still, for O-level subjects, influential factors were predicted and captured. To understand the mechanism of achieving good results in Divehi and other SSC subjects, different approaches of investigation would be required.

7. Discussion

The objectives of this paper were twofold: one was to identify the factors influencing the 10th-grade students' performance in three subjects, mathematics, English, and Divehi. Particularly, the effort was made to single out the impediments to performance in the O-level subjects. The second objective, based on the findings for the first point, is to consider the implications of employing an international examination system to certify students of the national education system in Maldives.

Although we initially hoped to find some hints about the improvement of educational administration and teaching in school, the statistical analysis of the exam scores and questionnaire returns demonstrated that performances in O-level subjects are determined largely by the socioeconomic status and home environment but not so much by factors in school and about teachers except for the teachers' years of experience. This is in clear contrast to students' performance in Divehi. There are several variables that commonly influence students' achievement in all subjects looked at in this research: namely, frequency of grade repetition, time spent on housework, and the location of the school. Except for these common conditions and gender, students' performance in Divehi wasn't much influenced by any household factors. The significant influence of school location as an explanatory variable suggests the concentration of population who values education and international certificate (and with better socio-economic status) in the capital city Malé. Many secondary schools were established outside of Malé in the last 20 years but are perceived by parents and the public to be still lacking basic conditions for learning.

Now, the striking implication of these findings to the Maldivian education system is that the students' performance in O-level exams does not much result from what schools teach or how innovatively teachers teach. In Maldives, the O-level exams and the curricula linked to them were adopted as the national curricula and the certificate examinations for lower secondary education for the majority of subjects. There are a few SSC subjects whose curricula and examinations are locally developed, namely, Divehi language, Islamic studies, and Arabic. Other than these SSC subjects, the Maldivian students get lower secondary certificates according to the externally developed O-level systems. The lower secondary enrolment has improved dramatically in the past decade or so, and more students sit for O-level exams. Therefore, the O-level system is a significant pillar of national education, which serves the masses in this country. Regardless of such widening coverage, the outcome shows bias to the elites – to those with better socioeconomic background and better family support for education. This elitist bias is different in nature from the ones pointed out in the literature on the cases where access to the O-level system itself was limited to the elites. In Maldives, the students who attend classes in ordinary public secondary schools do not have very high chances of getting diplomas unless they have extra support for study at home.

The case of Maldives suggests the necessity of paying more attention to the potential negative impact of international test certification on equity of educational outcomes in secondary education in countries with limited administrative capacities, rapidly expanded education system, and stronger demands

for international tests. As a small island nation, Maldives has experienced challenges with educational administration throughout its history. The atolls are distant from each other and sparsely populated, which seriously impedes the effective and efficient provision of education. It is also challenging to develop curricula, teacher education programmes, and monitoring and evaluation mechanisms (including examinations) for all subjects with limited national education experts for the relatively small number of students. Given such limitations in resources and capacity, to use a British examination system seems a realistic strategy for managing the national system. It is particularly so when parents prefer international certificates to domestic ones as passports to overseas educational institutions and employment.

At the same time, as we pointed out, the very fact that the O-level systems are adopted as part of the national education system causes some strain. The Maldivian education system heavily relies on a teaching force trained and brought from elsewhere, as half of the sample teachers for this study were expatriates. In such a situation, it is difficult to maintain consistency among different components of the education system and to ensure that teachers teach along the national guidelines.

The Maldivian government is in the process of enforcing a National Curriculum Framework, which overarches all subjects including O-level subjects. The reform aims to encourage more learner-centred teaching–learning process and increased linkage between classroom teaching and the local environment, while fostering national and cultural identity. Such curriculum aims do not necessarily fit with the desire of the Maldivian government and the public to improve students' performance in the O-level exams, which are developed elsewhere. There are two possibilities of interpreting the finding from this research that there is little relation between students' exam performance and school- and teacher-related factors. First, it hints that the teaching and learning processes in the schools are not effectively linked with what the exams are measuring or that the contents of the O-level curricula are not relevant to students' lives and are difficult for them to understand. Second, teachers teach in their own ways regardless of the changes in the curriculum and government policies. Experienced teachers who are more likely to be found in high performing schools in Malé are conservative in their teaching methods. Also, students of those high performing schools are likely to receive additional family support to prepare for the exams. In such a situation, if the government wants to improve the exam performance by reforming the system, it would need to start by increasing the ties between curriculum, exams, classroom teaching, and teacher training in a more comprehensive manner. Otherwise, expanded access to secondary education may contribute to widen the gap among the school population; namely, the gap between those who get family support to pass the exams and those who do not. Such a gap along the continuum of schooling can have an even severer effect of social exclusion than when many people did not go to secondary school.

The challenges faced in Maldives are common to many small and developing countries. Balancing the demand to maintain the national elements of the education system and the drive to adopt international examinations is difficult, while access to secondary education is expanding. Whether to respond to all of these somewhat contradictory demands within the framework of national education system may require a serious consideration by the government. An option of getting internationally-marketable credentials has to be available for people who want, but may not need to be compulsory for all students.

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Shoko Yamada is professor of comparative education and educational policy studies at the Graduate School of International Development, Nagoya University, Japan. She has conducted research on educational policy making and implementation in Africa and Asia. Her publications include: *Multiple Conceptions of Education for All and EFA Development Goals: The processes of adopting a global agenda in the policies of Kenya, Tanzania, and Ethiopia* (edited by the author, VDM Publisher, 2010); "Determinants of 'Community Participation': The Tradition of Local Initiatives and the Institutionalization of School Management Committees in Oromia Region, Ethiopia." *Compare: Journal of Comparative Education*, Vol. 44, Issue 2, 2014, pp. 162–185. Page number; and "The

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Kiyoshi Fujikawa is professor of econometrics, development economics and environmental economics at the Graduate School of International Development, Nagoya University, Japan. He published extensively on issues about East Asian economic development and environmental sustainability, utilizing the methods of input-output analysis. His works include: "East Asian Common Carbon Market -An Analysis using GTAP-E Model-" (co-authored with Hikari Ban) in Mori A., ed, *Environmental Governance for Sustainable Development in East Asia Region*, United Nations University Press, 2013, pp. 257–365; and "Productivity growth in the Chinese economy by industry (co-authored with Takatoshi Watanabe", *China & World Economy*, 13(5), 2005, pp. 56–67.

Krishna P. Pangen recently acquired a doctoral degree from the Graduate School of International Development, Nagoya University, Japan. He previously worked at the Ministry of Education, Federal Democratic Republic of Nepal. He is the author of the article "Factors Determining Educational Quality: Student Mathematics Achievement in Nepal", *International Journal of Educational Development* (Vol. 34, 2014, pp. 30–41).