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EUROPEAN PUBLIC SCHOOL REPORT 2023

PRELIMINARY RESULTS ON STUDENT POPULATION, EDUCATIONAL TRAJECTORIES, MATHEMATICS ACHIEVEMENT, AND STAKEHOLDER PERCEPTIONS

Luxembourg Centre for Educational Testing (LUCET) & Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques (SCRIPT)

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TABLE OF CONTENTS

• • •

INDEX OF FIGURES

• • •

• • •

• • •

INDEX OF TABLES

• • •

INDEX OF ACRONYMS

AES	Accredited European School(s)
EC	European curriculum
EIDE	*École Internationale Differdange et Esch-sur-Alzette*
EIGT	*École Internationale Gaston Thorn*
EIMAB	*École Internationale Mersch Anne Beffort*
EIMLB	*École Internationale de Mondorf-les-Bains*
EPS	European Public School(s)
ÉpStan	Luxembourg School Monitoring Programme – *Épreuves Standardisées*
ESC	*Enseignement secondaire classique*
ESG	*Enseignement secondaire général – Voie d'orientation*
ESG-VP	*Enseignement secondaire général – Voie de préparation*
EU	European Union
IC	Other international curricula
LESC	*École Internationale Edward Steichen*
LLIS	*Lënster Lycée International School*
MENJE	Ministry of Education, Children and Youth
SES	Socioeconomic status

EXECUTIVE SUMMARY – ENGLISH

- Luxembourg is a highly diverse country in terms of the socioeconomic, sociocultural, and linguistic composition of its population. This diversity is reflected in the national education system with an increasing share of students speaking a language other than Luxembourgish and/or German at home. In order to deal more adequately with the increasing language diversity of the student population and to counter educational inequalities that presumably result (at least in part) from a curriculum that places high language expectations on a growing number of students, the **Luxembourgish government has broadened the educational offer by introducing European public schools (EPS).** These schools follow the European curriculum and allow students to select one main language of instruction among the offered language sections (i.e., German, French, and English).
- By combining **data from different sources** (e.g., administrative student data, expert interviews with stakeholders, achievement scores in mathematics from the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" - ÉpStan), the present report offers **preliminary results on EPS in Luxembourg.** They consist of (1) the societal demand for EPS; (2) the composition of the student population in EPS; (3) the perception of EPS by school management teams and parents, and tangible education outcomes in the form of (4) educational trajectories; and (5) academic achievement in mathematics among EPS students compared to their peers in schools following the Luxembourgish curriculum. Described below are the key preliminary findings for each of these aspects:
  (1) Since 2016, a total of six EPS have opened in different locations across Luxembourg and the amount of students attending EPS has increased considerably at both primary and secondary school level. With the number of applicants surpassing the number of places currently available in EPS, it can be concluded that there appears to be **high demand for EPS**.
  (2) With students having a low socioeconomic status (SES) and/or students speaking Portuguese at home taking up the offer of EPS less frequently than high SES students and/or students speaking French or English at home, the **student population in EPS differs from the student population in schools following the Luxembourgish curriculum** (e.g., nationality, language primarily spoken at home, SES)**.**
  (3) School management teams and parents report a rather **positive perception of EPS**, with the extended linguistic offer (i.e., possibility to select a language section) being the main reason why parents select EPS for their child.
  (4) Looking at the educational trajectories of EPS students, preliminary results offer a tentative indication of **EPS students showing less school delay** than their peers in school following the Luxembourgish curriculum and **high continuity in their educational trajectories** (i.e., the vast majority of students remains in EPS instead of changing curriculum).
  (5) With regard to achievement in mathematics at primary school level, the present report indicates that **students in EPS perform better** than their peers in schools following the

Luxembourgish curriculum. At secondary school level, EPS students perform better than their peers in *Enseignement secondaire général - voie d'orientation* (ESG) and in *Enseignement secondaire général - voie de préparation* (ESG-VP), while staying below the performance of *Enseignement secondaire classique* (ESC) students. Although **low SES students or Portuguese speaking students in EPS show better achievement scores** than their respective peers in schools following the Luxembourgish curriculum it is not yet possible to draw strong conclusions based on these preliminary findings as these student groups currently take up the EPS offer less frequently than their peers considered as advantaged in the context of schooling. Their number is currently too small to allow more robust and in-depth statistical analyses.

- The present report's findings, especially regarding the tangible educational student outcomes, however, must be considered as tentative due to **important methodological limitations**. Indeed, the small numbers of students in EPS, particularly so for student groups with specific background characteristics (e.g., low SES students, Portuguese speaking students), do not allow separate analyses based on language section, for example. Thus any identified pattern could be sensitive to the inclusion or exclusion of outliers (e.g., students with particularly high or low ÉpStan scores). In addition, the comprehensive EPS school system at secondary school level (i.e., common track) is compared to the ability-based tracked school system of schools following the Luxembourgish curriculum, which limits the interpretability of secondary school data. Regarding the academic achievement tasks in mathematics, it should be noted that they were developed using education standards of the Luxembourgish curriculum. It is thus possible that achievement was underestimated for EPS students (e.g., assessment of mathematical concepts that have not yet been introduced in EPS). To this date, the ÉpStan administered in EPS only assessed academic achievement in mathematics for which a bigger overlap between curricula is assumed than for language subjects (e.g., German, French). Current psychometric shortcomings (e.g., different timepoints of language introduction within the language section in EPS, task development, comparability of tasks) do not yet allow to assess academic achievement in language subjects.
- Considering that the ÉpStan do not currently include a measure that operationalises the learning environment, the present report **is unable to draw any conclusions regarding which EPS aspect contributes decisively in explaining the observed differences in educational outcomes.** Nevertheless, three potential explanations are presented for further exploration: better linguistic fit in EPS (i.e., students learning to read and write in their native or a related language), structural differences between school offers (e.g., primary and secondary education within one institution, the institutionalized quality assurance and flexibility in teacher recruitment in EPS), and the differences in the composition of the student population (i.e., lower uptake rate of the EPS offer by low SES students and Portuguese speaking students).
- The finding that low SES students and Portuguese speaking students take up the EPS offer less frequently than their high SES peers and French or English speaking students, and that the EPS

student population differs from the student population in schools following the Luxembourgish curriculum, could potentially result out of **three main hurdles:** namely (1) the **application of selection criteria** considering that the demand for EPS is surpassing the number of available places (i.e., the linguistic and/or academic profile of applying students is taken into consideration); (2) **lacking system knowledge regarding the characteristics of Luxembourg's education system** among all actors involved in education (which makes it difficult to take informed decisions on a student's education); and (3) potential **organizational challenges that hamper the uptake of the EPS offer** (e.g., geographical location of the EPS).

- In light of the tentative result that students in EPS show better educational outcomes than many of their peers in schools following the Luxembourgish curriculum, two main **implications** for educational policy can be deduced. First, the student composition of EPS could be diversified in a targeted manner. This could be achieved, for example, by a) encouraging EPS to target student groups considered as disadvantaged in the context of schooling (e.g., low SES students) more effectively, and by b) **fostering an encompassing system knowledge** (e.g., characteristics, similarities and differences of the two school offers) among all actors involved in education (e.g., teachers, parents, educational advisors, school psychologists) to allow parents to take an informed decision on their child's education. A second implication would be to **introduce certain characteristics of EPS in schools following the Luxembourgish curriculum** (e.g., extending the linguistic offer as in the French literacy acquisition pilot project currently implemented in four C2.1 classes).
- By **progressively integrating EPS into the well-established Luxembourg School Monitoring Programme,** the ÉpStan will allow for a more in-depth analysis of potential educational outcome differences between EPS and schools following the Luxembourgish in the future. With the aim of providing reliable data for evidence-based policy making in the field of education, the results from the ÉpStan could in turn be used for the creation of school offers in which all students can make use of their full academic potential irrespective of their individual background characteristics (e.g., SES, language background).

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EXECUTIVE SUMMARY – DEUTSCH

- Luxemburg ist in Bezug auf die sozioökonomische, soziokulturelle und sprachliche Zusammensetzung seiner Bevölkerung ein äußerst vielfältiges Land. Diese Vielfalt spiegelt sich auch im nationalen Bildungssystem wider, denn der Anteil der Schüler*innen, die zu Hause eine andere Sprache als Luxemburgisch und/oder Deutsch sprechen, steigt. Um diese zunehmende sprachliche Vielfalt der Schülerschaft angemessener zu berücksichtigen und um Bildungsungleichheiten entgegenzuwirken, von denen man annimmt, dass sie (zumindest teilweise) aus einem Lehrplan resultieren, der hohe sprachliche Voraussetzungen an eine wachsende Zahl von Schüler*innen stellt, **hat die luxemburgische Regierung das Bildungsangebot durch die Einführung von Öffentlichen Europaschulen (EPS) erweitert.** Diese Schulen folgen dem europäischen Lehrplan und ermöglichen es den Schüler*innen, eine Hauptunterrichtssprache unter den angebotenen Sprachsektionen (d. h. Deutsch, Französisch und Englisch) zu wählen.
- Durch die **Zusammenführung verschiedener Datenquellen** (z. B. administrative Schülerdaten, Experteninterviews mit Schulleitungen, Leistungsergebnisse in Mathematik aus dem Luxembourg School Monitoring Programme "*Épreuves Standardisées*" - ÉpStan) bietet der vorliegende Bericht **vorläufige Ergebnisse über EPS in Luxemburg.** Die Resultate beziehen sich auf (1) die gesellschaftliche Nachfrage nach EPS, (2) die Zusammensetzung der Schülerschaft in EPS, (3) die Wahrnehmung von EPS durch Schulleitungen und Eltern sowie konkrete Bildungsergebnisse in Form von (4) Bildungsverläufen und (5) akademischen Leistungen in Mathematik von Schüler*innen in EPS im Vergleich zu Schüler*innen in Schulen, die dem luxemburgischen Lehrplan folgen. Im Folgenden werden die wichtigsten vorläufigen Ergebnisse für jeden dieser Aspekte beschrieben.
  (1) Seit 2016 wurden insgesamt sechs EPS an verschiedenen Standorten in Luxemburg eröffnet, und die Zahl der Schüler*innen, die EPS besuchen, ist sowohl in der Primar- als auch in der Sekundarstufe erheblich gestiegen. Da die Zahl der Bewerber*innen die Zahl der derzeit verfügbaren EPS-Plätze deutlich übersteigt, kann der Schluss gezogen werden, dass es offenbar **eine große Nachfrage nach EPS** gibt.
  (2) Da Schüler*innen mit niedrigem sozioökonomischem Status (SES) und/oder Schüler*innen, die zu Hause Portugiesisch sprechen, das EPS-Angebot weniger häufig wahrnehmen als Schüler*innen mit hohem SES und/oder Schüler*innen, die zu Hause Französisch oder Englisch sprechen, **unterscheidet sich die Schülerschaft in EPS von der Schülerschaft in Schulen mit luxemburgischem Lehrplan** (z. B. Nationalität, zu Hause hauptsächlich gesprochene Sprache, SES).
  (3) Schulleitungsteams und Eltern berichten von einer **eher positiven Wahrnehmung der EPS**, wobei das erweiterte Sprachangebot (d. h. die Möglichkeit, eine Sprachsektion zu wählen) der Hauptgrund ist, warum Eltern EPS für ihr Kind wählen.
  (4) Betrachtet man die Bildungsverläufe, so deuten die vorläufigen Ergebnisse darauf hin, dass **Schüler*innen in EPS weniger häufig verzögerte Bildungsverläufe aufweisen** als ihre

Mitschüler*innen, die nach dem luxemburgischen Lehrplan unterrichtet werden, und dass Schüler*innen in **EPS eine hohe Kontinuität in ihrem Bildungsverlauf** aufweisen (d. h. sie verbleiben zur Mehrheit in EPS anstatt den Lehrplan zu wechseln).

(5) Was die Mathematikleistungen in der Primarstufe betrifft, so weist der vorliegende Bericht darauf hin, dass die **Schüler*innen der EPS besser abschneiden** als ihre Mitschüler*innen in Schulen, die dem luxemburgischen Lehrplan folgen. In der Sekundarstufe schneiden die Schüler*innen der EPS besser ab als ihre Mitschüler*innen im *Enseignement secondaire général - voie d'orientation* (ESG) und im *Enseignement secondaire général - voie de préparation* (ESG-VP); sie bleiben aber unter den Leistungen der Schüler*innen des *Enseignement secondaire classique* (ESC). Obwohl **Schüler*innen mit niedrigem SES oder portugiesisch-sprachige Schüler*innen in EPS bessere Ergebnisse erzielen** als ihre jeweiligen Mitschüler*innen in Schulen, die dem luxemburgischen Lehrplan folgen, ist es auf Grundlage dieser vorläufigen Ergebnisse noch nicht möglich, eindeutige Schlussfolgerungen zu ziehen, da diese Schülergruppen das EPS-Angebot derzeit weniger häufig wahrnehmen als ihre im schulischen Kontext begünstigten Mitschüler*innen. Ihre Anzahl ist daher zu klein, um solidere und eingehendere statistische Analysen durchzuführen.

- Die Ergebnisse des vorliegenden Berichts, insbesondere in Bezug auf die konkreten Bildungsergebnisse der Schüler*innen, müssen aufgrund **erheblicher methodischer Einschränkungen** als vorläufig betrachtet werden. Die geringe Anzahl von Schüler*innen in EPS und insbesondere von Schülergruppen mit spezifischen Hintergrundmerkmalen (z. B. Schüler*innen mit niedrigem SES, portugiesisch-sprachige Schüler*innen) erlaubt es beispielsweise nicht, die Analysen nach Sprachsektionen aufzuteilen. Daher könnte jedes identifizierte Muster empfindlich auf die Einbeziehung oder den Ausschluss von sogenannten Ausreißern reagieren (z. B. Schüler*innen mit besonders hohen oder niedrigen ÉpStan-Werten). Darüber hinaus wird das eingliedrige EPS-Schulsystem in der Sekundarstufe mit dem mehrgliedrigen System (parallel verlaufende Schultracks mit unterschiedlichen Anspruchsniveaus) der Schulen nach dem luxemburgischen Lehrplan verglichen, was die Interpretierbarkeit der Sekundarschuldaten erheblich einschränkt. Im Hinblick auf die genutzten Mathematik-Kompetenztests ist zu berücksichtigen, dass diese auf der Grundlage der Bildungsstandards des luxemburgischen Lehrplans entwickelt wurden. Es kann daher nicht ausgeschlossen werden, dass die Leistungen der Schüler*innen in EPS unterschätzt wurden (z. B. durch die Einbeziehung von mathematischen Konzepten, die an EPS noch nicht eingeführt wurden). Zum jetzigen Zeitpunkt messen die in den EPS durchgeführten ÉpStan lediglich akademische Leistungen in Mathematik; ein Fach, für das eine größere Überschneidung zwischen den Lehrplänen angenommen wird als für Sprachfächer (z. B. Deutsch, Französisch). Derzeitige psychometrische Hürden (z. B. unterschiedliche Zeitpunkte der Spracheinführung innerhalb der Sprachsektionen in EPS, Aufgabenentwicklung, Vergleichbarkeit der Aufgaben) erlauben es noch nicht, akademische Leistung in den Sprachenfächern zu messen.

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- In Anbetracht der Tatsache, dass die ÉpStan derzeit kein Maß zur Operationalisierung des Lernumfelds enthalten, **lässt der vorliegende Bericht keine Schlussfolgerung darüber zu, welcher Aspekt der EPS entscheidend dazu beiträgt, die beobachteten Unterschiede in den Bildungsergebnissen zu erklären.** Dennoch werden drei mögliche Erklärungsansätze zur weiteren Erkundung vorgeschlagen: die bessere sprachliche Passung in den EPS (d. h. Schüler*innen lernen Lesen und Schreiben in ihrer Muttersprache oder einer verwandten Sprache), strukturelle Unterschiede zwischen den Schulangeboten (z. B. Primar- und Sekundarstufe innerhalb einer Einrichtung, eine institutionalisierte Qualitätssicherung und Flexibilität bei der Einstellung von Lehrkräften in EPS) und die unterschiedliche Zusammensetzung der Schülerschaft (z. B. geringere Inanspruchnahme des EPS-Angebots durch Schüler*innen mit niedrigem SES und portugiesisch-sprachige Schüler*innen).
- Die Feststellung, dass Schüler*innen mit niedrigem SES und portugiesisch-sprachige Schüler*innen das EPS-Angebot seltener wahrnehmen als ihre Mitschüler*innen mit hohem SES sowie französisch- oder englischsprachige Schüler*innen und dass die EPS-Schülerschaft sich von der allgemeine Schülerschaft in Luxemburg unterscheidet, könnte aus **drei Haupthindernissen** resultieren, nämlich (1) der **Anwendung von Auswahlkriterien** angesichts der Tatsache, dass die Nachfrage nach EPS die Zahl der verfügbaren Plätze übersteigt (d. h., das sprachliche und/oder akademische Profil der sich bewerbenden Schüler*innen wird bei ihrer Auswahl berücksichtigt), (2) **fehlende Systemkenntnisse über die Merkmale des luxemburgischen Bildungssystems** bei allen am Bildungssystem beteiligten Akteur*innen (was es schwierig macht, fundierte Entscheidungen über den Bildungsweg von Schüler*innen zu treffen) und (3) potenzielle **organisatorische Hürden, die die Inanspruchnahme des EPS-Angebots erschweren** (z. B. der geografische Standort der EPS).
- Angesichts des vorläufigen Ergebnisses, dass Schüler*innen der EPS bessere Bildungsergebnisse erzielen als viele ihrer Mitschüler*innen in Schulen, die dem luxemburgischen Lehrplan folgen, lassen sich zwei **Implikationen** für die Bildungspolitik ableiten. Erstens könnte die Zusammensetzung der Schülerschaft der EPS gezielt diversifiziert werden. Dies könnte beispielsweise dadurch erreicht werden, dass a) die EPS ermutigt werden, im schulischen Kontext **benachteiligte Schülergruppen effektiver anzusprechen** (z. B. Schüler*innen mit niedrigem SES) und dass b) ein **umfassendes Systemwissen** (z. B. Merkmale, Ähnlichkeiten und Unterschiede der beiden Schulangebote) bei allen am Bildungssystem beteiligten Akteur*innen (z. B. Lehrkräfte, Eltern, Fachkräfte der Bildungsberatung und des schulpsychologischen Diensts) **gefördert** wird, damit Eltern eine fundierte Entscheidung über die Bildung ihres Kindes treffen können. Eine zweite Maßnahme wäre **die Einführung bestimmter Merkmale der EPS in Schulen, die dem luxemburgischen Lehrplan folgen** (z. B. die Erweiterung des sprachlichen Angebots wie im Rahmen des Pilotprojekts zum Erwerb der Lese- und Schreibkenntnisse in französischer Sprache, das derzeit in vier C2.1-Klassen durchgeführt wird).

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- Durch die **schrittweise Integration der EPS in das etablierte Luxembourg School Monitoring Programme** werden die ÉpStan in Zukunft eine eingehendere Analyse potenzieller Unterschiede in den Bildungsergebnissen zwischen EPS und Schulen nach dem luxemburgischem Lehrplan ermöglichen. Diese Analysen werden es zum Ziel haben, zuverlässige Daten für eine evidenzbasierte Politikgestaltung im Bildungsbereich zu liefern, die wiederum für die Schaffung von Schulangeboten genutzt werden kann, in denen alle Schüler*innen ihr volles akademisches Potenzial unabhängig von ihren individuellen Hintergrundmerkmalen (z. B. SES, sprachlicher Hintergrund) ausschöpfen können.

EXECUTIVE SUMMARY – FRANÇAIS

- Le Luxembourg est un pays très diversifié en termes de composition socio-économique, socioculturelle et linguistique au sein de sa population. Cette diversité se reflète dans le système éducatif national avec une proportion croissante d'élèves parlant une langue autre que le luxembourgeois et/ou l'allemand à la maison. Afin de mieux gérer la diversité linguistique croissante de la population étudiante et de faire face aux inégalités éducatives supposées de résulter (au moins partiellement) d'un programme d'études qui impose des attentes linguistiques élevées à un nombre croissant d'élèves, le **gouvernement luxembourgeois a élargi l'offre scolaire en introduisant des écoles publiques européennes (EPS).** Ces écoles suivent le programme d'études européen et permettent aux élèves de choisir une langue d'enseignement principale parmi les sections linguistiques proposées (c'est-à-dire l'allemand, le français et l'anglais).
- En combinant des **données provenant de différentes sources** (par exemple, données administratives sur les élèves, entretiens d'experts avec les acteur·rice·s impliqué·e·s, compétences en mathématiques du Luxembourg School Monitoring Programme « *Épreuves Standardisées* » - ÉpStan), le présent rapport offre des **résultats préliminaires sur les EPS au Luxembourg.** Les résultats portent sur (1) la demande sociétale envers les EPS, (2) la composition de la population étudiante dans les EPS, (3) la perception des EPS par les directions d'école respectives et par les parents, et les résultats scolaires tangibles sous forme (4) de trajectoires scolaires et (5) de compétences en mathématiques des élèves dans les EPS par rapport à leurs pair·e·s dans les écoles qui suivent le programme d'études luxembourgeois. Les principaux résultats préliminaires pour chacun de ces aspects sont décrits ci-dessous.
  (1) Depuis 2016, six EPS au total ont ouvert leurs portes dans différents emplacements du Luxembourg et le nombre d'élèves fréquentant ces établissements a considérablement augmenté, aussi bien dans l'enseignement primaire que dans l'enseignement secondaire. Le nombre de candidatures dépassant le nombre de places actuellement disponibles dans les EPS, on peut conclure qu'il semble y avoir une **forte demande auprès des EPS**.
  (2) Étant donné que les élèves avec un statut socio-économique (SSE) faible et/ou les élèves parlant le portugais à la maison acceptent l'offre des EPS moins fréquemment que les élèves ayant un SSE élevé et/ou les élèves parlant le français ou l'anglais à la maison, **la population étudiante des EPS diffère de la population étudiante des écoles suivant le programme d'études luxembourgeois** (notamment au niveau de la nationalité, de la langue principalement parlée à la maison, et du SSE)**.**
  (3) Les équipes de direction des EPS et les parents font état d'une **perception plutôt positive des EPS**, l'offre linguistique élargie (c'est-à-dire la possibilité de sélectionner une section linguistique) étant la principale raison pour laquelle les parents choisissent une EPS pour leur enfant.
  (4) En ce qui concerne les trajectoires scolaires des élèves des EPS, les résultats préliminaires indiquent que les **élèves des EPS présentent moins de retard scolaire** que leurs pair·e·s dans les

écoles suivant le programme d'études luxembourgeois ainsi qu'une **continuité élevée dans leurs trajectoires scolaires** (c'est-à-dire les élèves restent majoritairement dans une EPS au lieu de changer leur programme d'études).

(5) En ce qui concerne les compétences en mathématiques dans l'enseignement primaire, le présent rapport indique que les **élèves des EPS obtiennent de meilleurs résultats** que leurs pair·e·s dans les écoles suivant le programme d'études luxembourgeois. Dans l'enseignement secondaire, les élèves des EPS obtiennent de meilleurs résultats que leurs pair·e·s dans l'*Enseignement secondaire général - voie d'orientation* (ESG) et dans l'*Enseignement secondaire général - voie de préparation* (ESG-VP), tout en restant en dessous des résultats des élèves de l'*Enseignement secondaire classique* (ESC). Bien qu'au niveau des EPS, les **élèves ayant un SSE faible ou les élèves parlant le portugais à la maison obtiennent de meilleurs résultats** que leurs pair·e·s (SSE faible; parlant le portugais) dans les écoles suivant le programme d'études luxembourgeois, il n'est pas encore possible de tirer des conclusions solides sur la base de ces résultats préliminaires car ces groupes d'élèves semblent accepter l'offre des EPS moins fréquemment que les élèves considéré·e·s comme favorisé·e·s sur le plan scolaire. Leur nombre est donc trop petit pour permettre des analyses statistiques plus robustes et plus approfondies.

- Les conclusions du présent rapport, notamment en ce qui concerne les résultats scolaires tangibles des élèves, doivent toutefois être considérées comme préliminaires en raison **d'importantes limitations méthodologiques**. En effet, le petit nombre d'élèves dans les EPS, en particulier pour les groupes d'élèves présentant des caractéristiques spécifiques (c'est-à-dire les élèves avec un SSE faible, les élèves parlant le portugais) ne permet pas, par exemple, de spécifier les analyses en fonction de la section linguistique. Ainsi, toute tendance identifiée pourrait être sensible à l'inclusion ou à l'exclusion de valeurs aberrantes (par exemple, les élèves ayant des scores ÉpStan particulièrement élevés ou faibles). En outre, au niveau de l'enseignement secondaire, le système global des EPS (c'est-à-dire un tronc commun) est comparé au système scolaire stratifié (présentant différentes filières sur base d'aptitudes scolaires) des écoles qui suivent le programme d'études luxembourgeois, ce qui limite l'interprétabilité des données de l'enseignement secondaire. En ce qui concerne les épreuves de compétence en mathématiques, il faut tenir compte du fait qu'elles se réfèrent aux normes éducatives du programme d'études luxembourgeois. Il n'est donc pas exclu que les résultats aient été sous-estimés pour les élèves des EPS (par exemple, compte tenu d'une évaluation de concepts mathématiques qui n'ont pas encore été introduits dans les EPS). Actuellement, les ÉpStan administrées dans les EPS n'ont évalué que les compétences en mathématiques, une matière pour laquelle on estime un plus grand chevauchement des programmes d'études que pour les matières linguistiques (par exemple, l'allemand, le français). Les obstacles psychométriques actuels (par exemple, les différents moments de l'introduction d'une langue dans les sections linguistiques des EPS, le développement des épreuves, la comparabilité des épreuves) ne permettent pas encore d'évaluer les compétences en matières linguistiques.

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- Étant donné que les ÉpStan ne comprennent actuellement pas de mesure permettant d'opérationnaliser l'environnement d'apprentissage, le présent rapport **ne permet pas de tirer une conclusion sur l'aspect des EPS qui contribue de manière décisive à expliquer les différences observées au niveau des résultats scolaires tangibles.** Néanmoins, trois explications potentielles se présentent pour une exploration plus approfondie: un meilleur ajustement linguistique au niveau des EPS (c'est-à-dire que les élèves apprennent à lire et à écrire dans leur langue maternelle ou dans une langue apparentée), des différences structurelles entre les offres scolaires (par exemple, l'enseignement primaire et secondaire au sein d'un même établissement, l'assurance qualité institutionnalisée et la flexibilité dans le recrutement des enseignant·e·s dans les EPS), et les différences dans la composition de la population étudiante (c'est-à-dire le taux d'acceptation plus faible de l'offre des EPS par les élèves ayant un SSE faible et les élèves parlant le portugais).
- La constatation que les élèves ayant un SSE faible et les élèves parlant le portugais acceptent l'offre des EPS moins fréquemment que leurs pair·e·s avec un SSE élevé et les élèves parlant le français ou l'anglais, et que la population étudiante des EPS diffère de la population étudiante des écoles suivant le programme d'études luxembourgeois, pourrait potentiellement résulter de **trois obstacles principaux**, à savoir (1) **l'application de critères de sélection** étant donné que la demande pour les EPS dépasse le nombre de places disponibles (c'est-à-dire que le profil linguistique et/ou académique des candidat·e·s est pris en considération), (2) **un manque de connaissance systématique sur les caractéristiques du système éducatif luxembourgeois** parmi tous les acteur·rice·s impliqué·e·s dans le système éducatif (ce qui rend difficile la prise de décisions informée sur l'éducation d'un·e élève), et (3) **des défis organisationnels potentiels qui entravent l'utilisation de l'offre des EPS** (par exemple, l'emplacement géographique de l'EPS).
- À la lumière du résultat préliminaire selon lequel les élèves des EPS obtiennent de meilleurs résultats scolaires que la plupart de leurs pair·e·s dans les écoles suivant le programme d'études luxembourgeois, deux **implications** principales pour la politique éducative peuvent être déduites. Premièrement, la composition des élèves des EPS pourrait être diversifiée de manière ciblée. Cela pourrait se faire, par exemple, en a) **encourageant les EPS à cibler plus efficacement les groupes d'élèves considéré·e·s comme défavorisé·e·s sur le plan scolaire** (par exemple, les élèves avec un SSE faible) et en b) **favorisant une connaissance globale du système** (par exemple, les caractéristiques, les similitudes et les différences des deux offres scolaires) parmi tous les acteur·rice·s impliqué·e·s dans l'éducation (par exemple, les enseignant·e·s, les parents, les services psychosociaux et d'orientation scolaires) afin de permettre aux parents de prendre une décision éclairée sur l'éducation de leur enfant. Une deuxième implication serait d'**introduire certaines caractéristiques des EPS dans les écoles suivant le programme d'études luxembourgeois** (par exemple, en élargissant l'offre linguistique comme dans le cadre du projet pilote d'acquisition de la lecture et de l'écriture en français actuellement mis en œuvre dans quatre classes C2.1).

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- En **intégrant progressivement les EPS dans le Luxembourg School Monitoring Programme**, les ÉpStan permettront une analyse plus approfondie des différences potentielles au niveau des résultats scolaires entre les EPS et les écoles suivant le programme d'études luxembourgeois à l'avenir. Cette analyse aura pour but de fournir des données fiables pour l'élaboration de politiques factuelles dans le domaine de l'éducation, qui pourraient, à leur tour, promouvoir la création d'offres scolaires qui permettraient à tous les élèves d'exploiter pleinement leur potentiel académique, indépendamment de leurs caractéristiques individuelles (par exemple, le SSE, le contexte linguistique).

PREFACE

Claude Meisch

Minister of Education, Children and Youth

Preface

Mit der Schaffung gleich mehrerer öffentlicher internationaler Schulen, die meisten basierend auf den Lehrplänen der Europaschulen, hat die Regierung einen entscheidenden Schritt getan, um die Schullandschaft unseres Landes an die Diversität seiner Bevölkerung anzupassen. Eingeführt mit dem Ziel, Kinder mit ganz unterschiedlichen Muttersprachen in einer Schule zu integrieren, bieten die Europaschulen genau die Flexibilität im Umgang mit Unterrichts- und Fremdsprachen, die einer heterogenen Schülerschaft wie der unsrigen faire Bildungschancen ermöglicht.

Die ersten Schülerinnen und Schüler einer öffentlichen Europaschule in Luxemburg, der *École internationale de Differdange*, haben in diesem Sommer das *European Baccalaureate* erworben. Dies ist auch der richtige Zeitpunkt für eine erste Evaluation der wohl bedeutendsten bildungspolitischen Innovation der vergangenen Jahrzehnte.

Das *Luxembourg Centre for Educational Testing* (LUCET) der Universität Luxemburg geht in Zusammenarbeit mit *Service de coordination de la recherche et de l'innovation pédagogiques et technologiques* (SCRIPT) in dieser Evaluationsstudie insbesondere der Frage nach, inwieweit die öffentlichen Europaschulen Schülerinnen und Schülern mit Migrationshintergrund und aus sozioökonomisch schwächeren Familien bessere Erfolgschancen bieten als unser herkömmliches Schulsystem. Von besonderem Interesse ist auch, ob die Schülerinnen und Schüler, die vom flexibleren Sprachunterricht profitieren, auch den Weg in die öffentlichen Europaschulen finden und ob ihre Schullaufbahn dann geradliniger verläuft. Dies sind zentrale Fragen für die Weiterentwicklung unserer Schullandschaft, deren Beantwortung wichtige Impulse für weitere bildungspolitische Reformen geben wird.

Auch wenn der nun vorliegende Bericht noch auf relativ kleinen Schülerzahlen beruht, sind die Ergebnisse mehr als ermutigend. So schneiden die Schülerinnen und Schüler der öffentlichen Europaschulen bei den *Épreuves standardisées* deutlich besser ab und weisen eine gradlinigere Schullaufbahn auf. Doch der Bericht zeigt auch, dass mit einer vielfältigeren Schullandschaft die Notwendigkeit einer gezielten Orientierung aller Schüler steigt, damit alle Schülerinnen und Schüler in den Genuss eines passenden Schulmodells kommen.

Mit der nun vorliegenden Analyse kann die Weiterentwicklung unseres Bildungssystems wissenschaftlich fundiert geplant werden.

Claude Meisch

Minister für Bildung, Kinder und Jugend

CHAPTER I: EUROPEAN PUBLIC SCHOOLS IN LUXEMBOURG

HISTORY, OVERVIEW, ATTENDANCE RATES, AND COMPOSITION OF THE STUDENT POPULATION

Elif Tuğçe Gezer, Susanne Backes, Ulrich Keller & Thomas Lenz

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1. EUROPEAN PUBLIC SCHOOLS IN LUXEMBOURG: HISTORY, OVERVIEW, ATTENDANCE RATES, AND COMPOSITION OF THE STUDENT POPULATION

SUMMARY

- The European Schools are established and controlled by the governments of the Member States of the European Union (EU) to provide multicultural and multilingual education leading up to the European Baccalaureate for children of employees working for European institutions. Since 2005, the European Baccalaureate has been available for other national schools in European countries provided that they adhere to the same pedagogical standards as the European Schools. However, these Accredited European Schools (AES) operate within the national school networks, and they are managed and funded by the Member State in question.

- In Luxembourg, European public schools (EPS) operate on a full-day basis and offer various extracurricular activities. They are equipped with several academic and support centers to foster students' personal and academic development and to support students' families. They present an alternative to public and state-subsidized schools following the Luxembourgish curriculum by enabling students to choose the medium of instruction among English, German, and French language sections. All EPS offer the European curriculum, and some also provide the Luxembourgish curriculum. These schools are open to everyone and free of charge.

- Most EPS catch proportionally more students from their home municipalities (15% to 20%) than from the surrounding areas. EPS students show a higher travel distance on average than their peers in schools following the Luxembourgish curriculum.

- Since the establishment of the first EPS in Luxembourg in 2016, the student percentage in the European curriculum has increased both at primary and secondary school level. In the school year 2021/22, at primary school level, most of the students were of French, Luxembourgish, or other non-EU nationalities. As for the secondary school level, the majority of the students were of French, Portuguese, Luxembourgish, or other non-EU nationalities. Both at the primary and secondary school level, most students primarily speak French at home.

- The distribution of students within the language sections differs from one EPS to another.

- On average the students' socioeconomic status (SES) in primary and secondary EPS is higher than in schools following the Luxembourgish curriculum. Despite some fluctuations, the same holds true for each EPS when compared to the average SES in other schools.

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1.1 CHAPTER OBJECTIVES AND DATA BASIS

The objectives addressed in the present chapter are the following:

1) Description of history and context of the newly established European public schools (EPS)
2) Overview of different school offers in Luxembourg's education system and situating of the EPS in the overall educational landscape
3) Description of organizational structure, language of instruction, and main characteristics of EPS
4) Distribution of student demographics differentiated by curriculum
5) Description of catchment areas differentiated by curriculum
6) Excursus on recently arrived Ukrainian students' placement in Luxembourg's education system

To accomplish objectives 1 to 3, official documents were utilized from the Office of the Secretary-General of the European Schools, from the Ministry of Education, Children and Youth (MENJE) as well as research literature and websites of EPS located in Luxembourg. The analyses to respond to research aims 4 to 6 are mainly based on administrative student data (*fichier élèves*; Scolaria), which are only available for students enrolled in public and state-subsidized (i.e., private) schools following the Luxembourgish curriculum (in yellow, see *Figure I.1*) and in public schools following international curricula (in green, see *Figure I.1*). State-subsidized schools following international curricula are not included in the administrative student data set (in orange, see *Figure I.1*). The variables used – nationality, country of birth, language primarily spoken at home, and gender – are based on full-cohort information gathered from students/parents within the schools.

1.2 HISTORY AND CONTEXT

Luxembourg is a diverse context in terms of the socioeconomic, cultural, and linguistic backgrounds of its inhabitants. Although it is a small country, the population is becoming increasingly multicultural. High immigration rates and cross-border wage earners from neighboring countries (Eurydice, 2022) contribute to this increasing multiculturality. As of the beginning of 2022, with a 1.7% growth compared to the year before, the number of inhabitants reached 645.397, of which 47.1% (*N* = 304.167) were foreigners (Klein & Peltier, 2022). *Table I.1* shows the population of foreigners in 2022 based on their nationality.

Table I.1- The Population of Foreigners in Luxembourg Based on their Nationality in 2022

Nationality	***N***	**%**
Europe (EU)	**245908**	**80.8%**
Portuguese	93678	30.8%
French	49173	16.2%
Italian	24116	7.9%
Belgian	19414	6.4%
German	12796	4.2%
Other Europe	**18595**	**6.1%**
British	4104	1.3%

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Nationality	*N*	%
Montenegrin	2855	0.9%
Russian	1951	0.6%
Ukrainian	1075	0.4%
Africa	**13668**	**4.5%**
Cape Verde	2507	0.8%
Morocco	1616	0.5%
Eritrea	1775	0.6%
America	**7717**	**2.5%**
Brazilian	2853	0.9%
American	2170	0.7%
Canadian	561	0.2%
Asia	**17691**	**5.8%**
Chinese	4142	1.4%
Indian	3777	1.2%
Syrian	2696	0.9%
Oceania	**244**	**0.1%**
Australian	188	0.1%
Stateless Persons	**184**	**0.1%**
Unknown	**160**	**0.1%**

Source: Klein & Peltier (2022)

Although generally considered an asset, this diversity can also be seen as a possible source of inequality regarding that the public trilingual education system does not reflect the country's aforementioned multicultural and multilingual context (Eurydice, 2022; MENJE, 2020). While the main language of instruction is Luxembourgish (pre-school) and German in primary and lower secondary education, students are also taught French at primary school (C2 onwards). The language of instruction in most subjects becomes French in upper secondary education in the *Enseignement secondaire classique*, while it remains German in the *Enseignement secondaire général* (Eurydice, 2022; Gehring et al., 2022). Languages are given a high value in the Luxembourgish schools and a correspondingly large place in the curriculum. However, many students fail due to the language hurdles that this setup generally presents to them.

To remedy this situation, there have been initiatives to diversify the language offer, to reinforce non-formal and early childhood education, and to provide access to a plurilingual education program (MENJE, 2020). A relatively new school offer to better deal with the language diversity in Luxembourg is the expansion of public schools that follow the European curriculum (Eurydice, 2022). They are part of a public school offer, that implements international curricula – more precisely the European curriculum instead of the Luxembourgish one. There are also other public schools following, for example, UK-style education, which leads to A-levels diploma, and International education, which leads to International Baccalaureate (MENJE, 2020).

Compulsory education is provided both in public and state-subsidized schools, and these schools either follow the Luxembourgish curriculum or an international curriculum (see *Figure I.1*).

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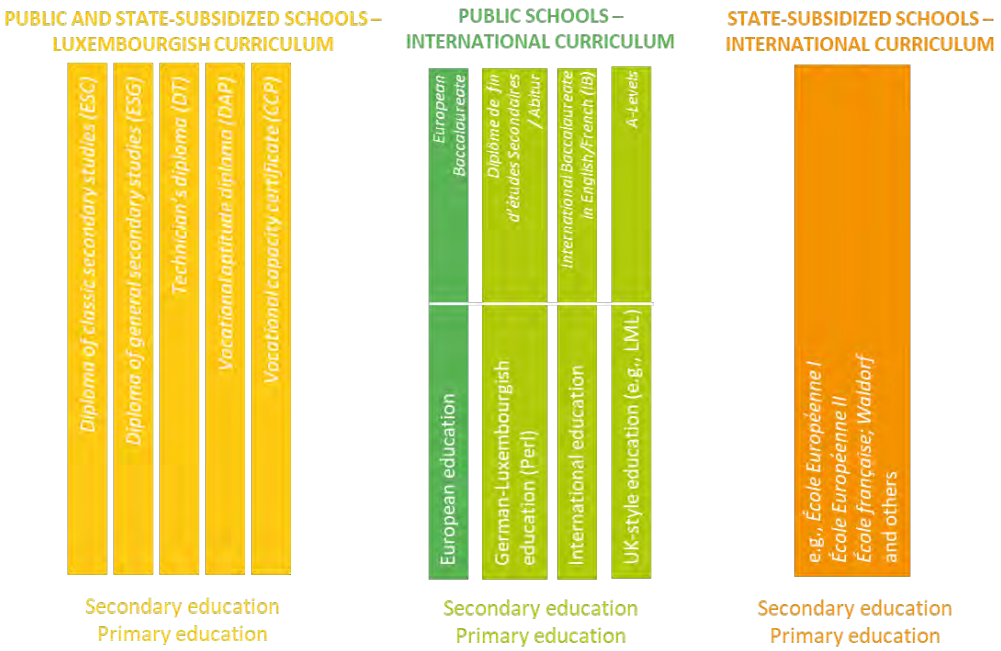
Figure I.1- The Curricula Implemented in Public and State-Subsidized Schools (School Year 2021/22)



Source: MENJE (2022c)

Public and state-subsidized schools following the Luxembourgish curriculum (in yellow, see *Figure I.1*) offer primary education in four consecutive cycles (i.e., C1, C2, C3, and C4) and secondary education in three main school tracks, namely the *Enseignement secondaire classique* (ESC), the *Enseignement secondaire général - voie d'orientation* (ESG), *and* the *Enseignement secondaire général - voie de préparation* (ESG-VP). While the ESC leads to a diploma of classic secondary studies, the ESG leads to a diploma of general secondary studies, technician's diploma, vocational aptitude diploma, or vocational capacity certificate depending on the tracks followed (MENJE, 2022a).

International curricula are provided by both public and state-subsidized schools. In public schools, a variety of international curricula is taught such as A-levels in the *Lycée/International School Michel Lucius* or German-Luxembourgish Education in the *Schengen-Lyzeum* in Perl, Germany (in light green, see *Figure I.1*). Since 2016, the public school system also provides the European curriculum (in dark green, see *Figure I.1*), also labeled as Accredited European Schools (AES).

State-subsidized schools implementing an international curriculum do not follow the Luxembourgish curriculum of the MENJE (in orange, see *Figure I.1*).

In the school year 2021/22, there were 109.596 students in Luxembourg's primary and secondary public and state-subsidized schools implementing the Luxembourgish or international curricula. The distribution of students by curriculum is presented in *Table I.2*. Students enrolled in state-subsidized schools implementing an international curriculum (11.3%, *N* = 12.392) will not be considered in the

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following analyses due to the scope of the report and data limitations (i.e., not included in the administrative student data set).

Table I.2 – The Distribution of Students by Curriculum in Public and State-Subsidized Schools (School Year 2021/22)[1]

Curriculum	School Level		Total	%
	Primary	Secondary		
▪ Luxembourgish curriculum in public and state-subsidized schools	52424	38442	90866	82.9%
▪ European curriculum in public schools	1378	2228	3606	3.3%
▪ Other international curricula in public schools	570	2162	2732	2.5%
▪ International curricula in state-subsidized schools	6161	6231	12392	11.3%
Total	60533	49063	109596	100%

As mentioned earlier, international curricula are also implemented in some public schools other than the EPS in Luxembourg[2] (MENJE, 2022b). *Figure I.2* shows the number of students enrolled in public schools implementing an international curriculum in the school year 2021/22. Accordingly, while the number of EPS students corresponds to 3.3% of the school population, that of students enrolled in other international curricula in public schools corresponds to 2.5% of the population, which together account for 5.8% (see *Table I.2*) of the total school population. There are two international curricula implemented in public primary schools (i.e., the European curriculum and A-Levels) and four international curricula implemented in public secondary schools (i.e., the European curriculum, A-Levels, International Baccalaureate, and German-Luxembourgish education).

Figure I.2 - Students in Public Schools Implementing Different International Curricula (School Year 2021/22)

[1] The state-subsidized schools implementing an international curriculum are schools such as *Waldorf* and *Montessori*. Besides, *École Européenne I* and *École Européenne II* belong to these state-subsidized schools.
[2] International Baccalaureate at *Lycée technique du Centre* (French), *Athénée de Luxembourg* (English), and *Lycée de Garçons Esch* (English); A-levels at *the International School Michel Lucius* (English; MENJE, 2022b).

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1.3 PUBLIC SCHOOLS FOLLOWING THE EUROPEAN CURRICULUM

One of the significant changes in Luxembourg's education system in the last years was the establishment of EPS, which operate independently from public and state-subsidized schools following the Luxembourgish curriculum by offering multicultural and multilingual education according to the European curriculum (MENJE, 2020). This was encouraged by the diversification of the school offer, which provided students with flexibility in language acquisition (MENJE, n.d.). As shown in *Figure I.2*, the EPS attract more students both at primary (*N* = 1.378) and secondary (*N* = 2.228) school level than other international curricula offered in public schools. The number of students within the EPS strongly increased over the last years (see *1.4*).

What is the difference between the new EPS and École Européenne I and École Européenne II?

The EPS function in a similar way to the two European Schools that were established in 1953 and 2004 in Luxembourg. These European Schools were established jointly by the governments of the EU Member States to provide education in their native language for children of parents working in European institutions. The European Schools are financed with funds from the EU.

The success of this common educational model encouraged the European Commission and Euratom (European Atomic Energy Community) to establish other European Schools in their respective locations. European Schools in general are legally considered public institutions, and they are controlled by the EU Member States. By their nature, they aim to provide multicultural and multilingual education at pre-school, primary, and secondary school levels leading up to the European Baccalaureate. Within the EU, there are currently 13 European Schools[3] offering the European Baccalaureate to approximately 28.750 students across six EU-countries (Office of the Secretary-General of the European Schools, 2023a) with the *École Européenne I* and the *École Européenne II* being located in Luxembourg.

Based on the suggestions of the European Parliament, the European Baccalaureate has also become accessible via national schools in Member States since 2005 for children of employees working for European institutions, who live in locations where it is not possible to provide this curriculum in fully-fledged European Schools. Although these schools are to meet the pedagogical requirements of the European Schools, they operate within the framework of the Member States' national school networks. Therefore, they are not subject to the legal, administrative, and financial framework compulsory for the European Schools. Each Member State is responsible for the administration and funding of its AES. There are currently 23 AES in 13 European countries, and three schools are candidates for accreditation. *Figure I.3* shows the location of these schools. It is worth mentioning that Luxembourg

[3] *Luxembourg I* (Kirchberg) and *Luxembourg II* (Mamer) in Luxembourg; *Brussels I* (Uccle + Berkendael), *Brussels II* (Woluwe + Evere), *Brussels III* (Ixelles), *Brussels IV* (Laeken), and *Mol* in Belgium; *Frankfurt am Main*, *Karlsruhe*, *Munich* in Germany; *Bergen N. H.* (Petten) in Netherlands; *Alicante* in Spain; *Varese* in Italy (Office of the Secretary-General of the European Schools, 2023a)

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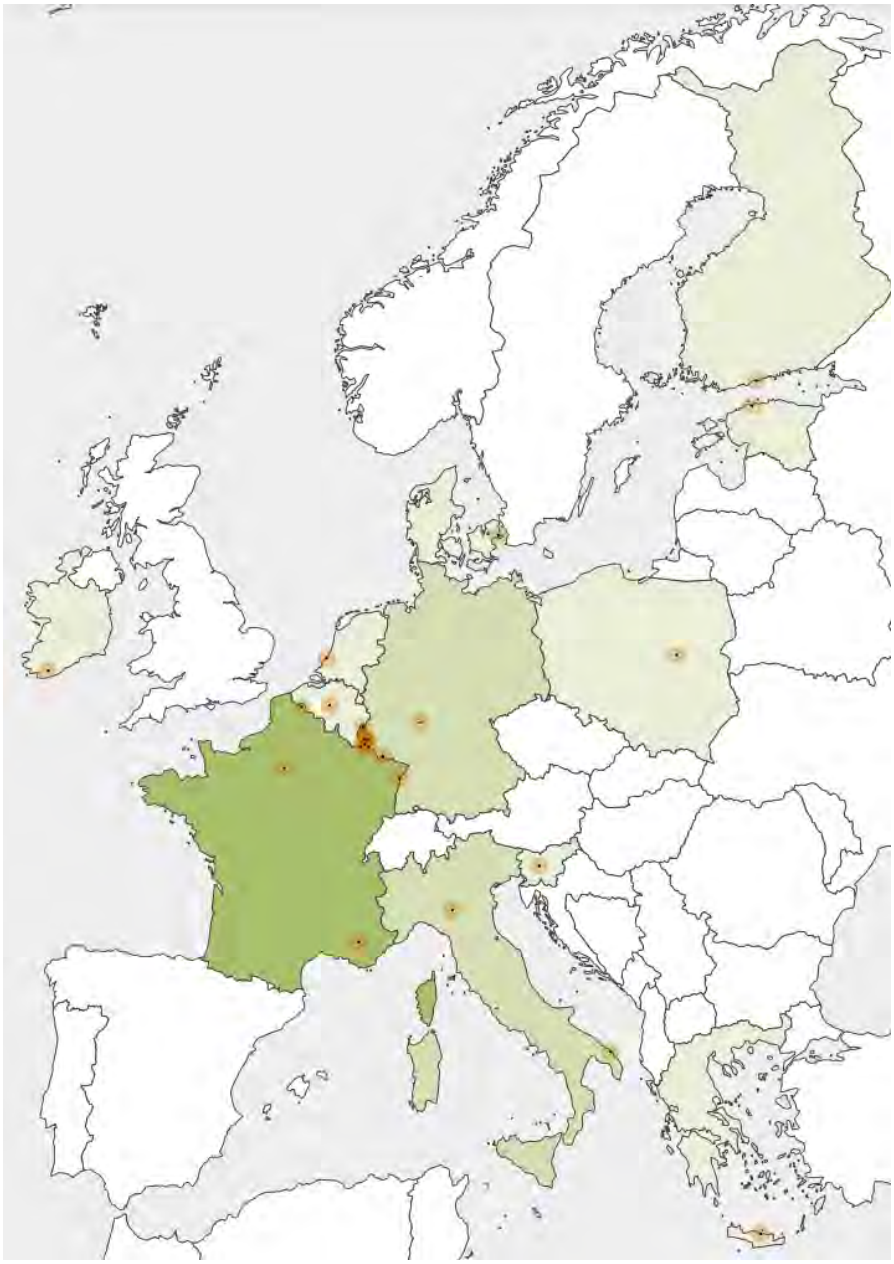
has more AES than the other countries. Furthermore, in 2022, Luxembourg was the host of the largest AES in Europe (*École Internationale Differdange et Esch-sur-Alzette*, EIDE) in terms of the number of registered students. In total, the student population across all AES in Europe grew by 14% between the school year 2021/22 to 2022/23. On average, schools with large growth are more recently established schools. As Luxembourgs' AES have been recently established, Luxembourgs' student population in AES shows an immense growth rate of 31.7%[4] from the school year 2021/22 to 2022/23 (Office of the Secretary-General of the European Schools, 2023b).

Figure I.3 – Locations of the Accredited European Schools



[4] This value is calculated by using the data provided on page 8 of *Accredited European Schools: 2022-2023 Data Report* (Schola Europaea, 2023).

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As shown in *Figure I.3*, there are six EPS, or AES, in Luxembourg: *École Internationale Differdange et Esch-sur-Alzette* (EIDE), *École Internationale Gaston Thorn* (EIGT), *École Internationale Mersch Anne Beffort* (EIMAB), *École Internationale Mondorf-les-Bains* (EIMLB), *École Internationale Edward Steichen/Lycée Edward Steichen* (LESC), and *Lënster Lycée International School* (LLIS). In regards to their school management, the MENJE is in charge of administration, financing and staff, whereas the Office of the Secretary-General of the European Schools (Belgium) is responsible for curricula, schedule as well as promotion criteria and certification.

How are the EPS structured?

In the European curriculum, studies are organized in three cycles: (1) early education (nursery), (2) primary education (P1-P5), and (3) secondary education (S1-S7). Besides, secondary education is divided into three sub-cycles: observation (S1-S3), pre-orientation (S4-S5), and orientation (S6-S7), each of which lasts one year (Office of the Secretary-General of the European Schools, 2023c). *Table I.3* presents the organization of studies based on cycles and corresponding classes and age ranges.

Table I.3 - Organization of Studies in European Public Schools

Cycle	Classes	Age
Early education/Nursery	1-2	4-5
Primary education	P1-P5	6-10
Secondary education		
Observation cycle	S1-S3	11-13
Pre-orientation cycle	S4-S5	14-15
Orientation cycle	S6-S7	16-18

The European curriculum consists of a core of compulsory subjects and a range of other subjects that may be studied for two or four periods per week or at an advanced level. During the orientation cycle, students can choose from a wide range of optional courses (Office of the Secretary-General of the European Schools, 2023c). In addition to these courses, the language policy of EPS nurtures Luxembourg's multilingual education. It aims to help students learn the three administrative languages (Luxembourgish, German, and French).

What are the languages of instruction in EPS?

Unlike public and state-subsidized schools following the Luxembourgish curriculum, EPS offer language sections (German, French, English) in which students choose their main language (L1, either their native or dominant language) and pursue their educational trajectory mainly and continuously in this language. In the first year of primary school, students also choose their first foreign language (L2), followed up to the end of secondary school. Then, from the first year of secondary school onwards, students are required to learn a second foreign language (L3). The EPS also deliver elective language courses (L4). The schools offer a range of language courses and students are allowed to freely choose among these. Luxembourgish is compulsory for all students attending EPS from P1 to S3 (MENJE, n.d.).

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What are the main characteristics of EPS?

EPS award the European Baccalaureate to the students at the end of successful secondary education and it is recognized throughout Europe. Pedagogical principles include the common core curriculum until S3 (end of lower secondary school) with options according to students' talents and interests starting from S4 as well as a focus on first-rate science education from primary school level onwards. EPS operate on a full-day basis with wider opening hours. Therefore, in addition to the compulsory and optional academic courses, the schools offer various extracurricular activities. Besides, they are equipped with several academic and support centers (e.g., *Service d'éducation et d'accueil pour enfants* and *Service pyscho-social et d'accompagnement scolaires*), with a team of professionals who can help students with their personal and academic development and support them and their families. Although the schools do not publish much information on their staff, they have similar criteria for teacher recruitment to national schools that is to have access to the teaching profession (master's degree for secondary school; completed pedagogical training), prior experience as a teacher or in socio-educational or psycho-social care, and language proficiency (C1 for teachers of the subjects Art, Music, and Physical Education, C2 for non-native speaker teachers of Mathematics, Science Subjects, and Economics, and C2 for non-native speakers of foreign languages (L2, L3, L4) and of History and Geography as well as B2 in at least one of the administrative languages as defined in the *loi du 24 février 1984 sur le régime des langues*). Overall, EPS present an alternative to public and state-subsidized schools following the Luxembourgish curriculum by providing students with opportunities to choose the language of instruction among the available language sections. *Figure I.4* shows the common characteristics of EPS.

There are also specific similarities and differences in the curriculum implementation and the schools' facilities. To begin with, all schools offer the European curriculum at primary and secondary school level, but some schools also provide the Luxembourgish curriculum for secondary education as an alternative. Besides, some schools provide two-year early childhood education. All EPS offer the European curriculum free of charge, and they are in general open to everyone interested irrespective of the municipality of residence suject to capacity, or availability, which is different from public and state-subsidized schools following the Luxembourgish curriculum. Although the schools are open to all residents of the country as well as to cross-border students, students living in the neighbourhood of the schools are given priority.

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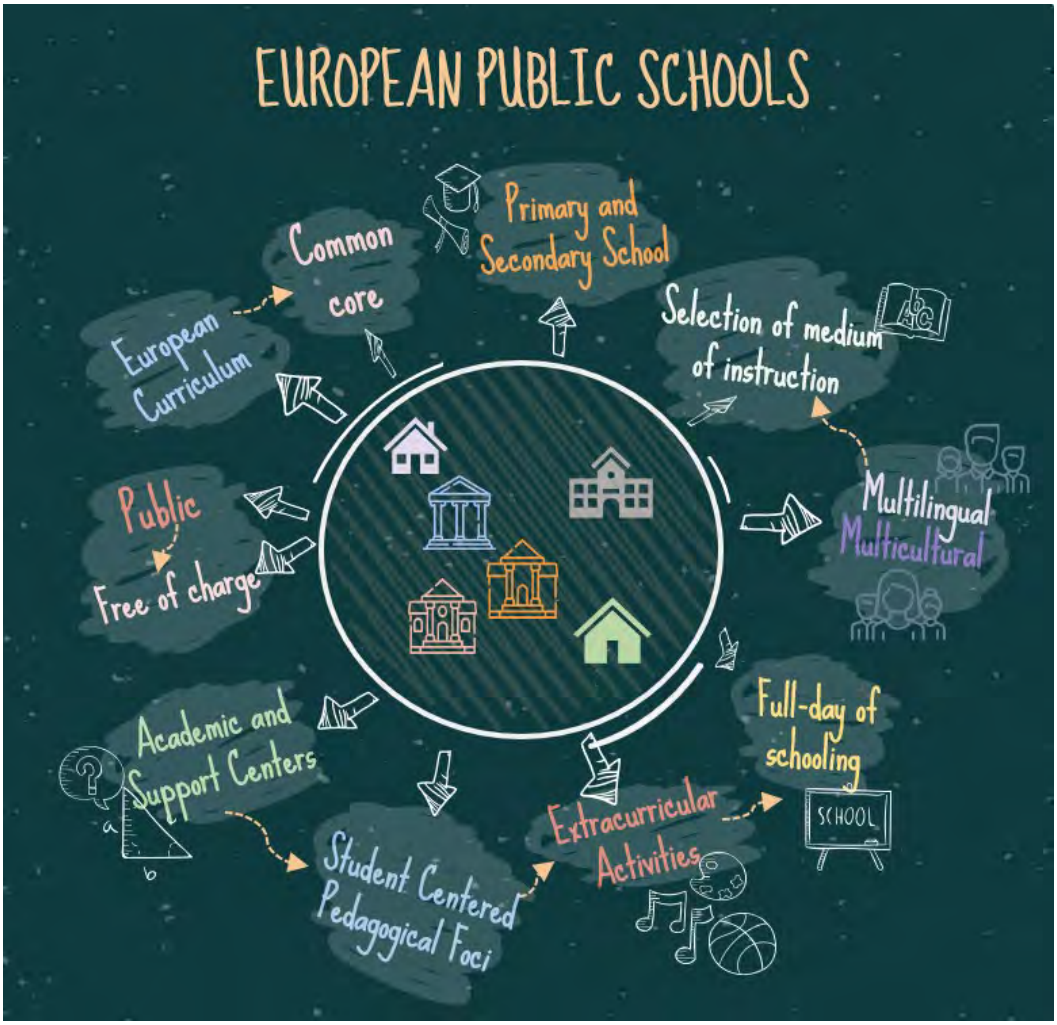
Figure I.4 - Characteristics that European Public Schools Share



Icons and images: Flaticon and Freepik.

1.4 COMPARISON OF STUDENT DEMOGRAPHICS IN DIFFERENT SCHOOL CURRICULA

The number of students in international curricula or the European curriculum in public schools has increased in recent years. Looking at the trend since 2016, the opening year of the first EPS (see *Figure I.5*), it can be seen that the share of students in the EPS at primary school level has increased from 0.1% (*N* = 57) in 2016/17 to 2.5% (*N* = 1.378) in 2021/22. At secondary school level (see *Figure I.6*), the increase in share is even more pronounced by moving from 0.3% (*N* = 103) to 5.2% (*N* = 2.228). The proportion of students in other international curricula is at a stable level in primary school (1.0%, *N* = 570). In secondary school, a stable but higher share of 5.0% (*N* = 2.162) can be observed.

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Figure I.5 - Development of Students in International or European Curricula in Public Primary Schools in %

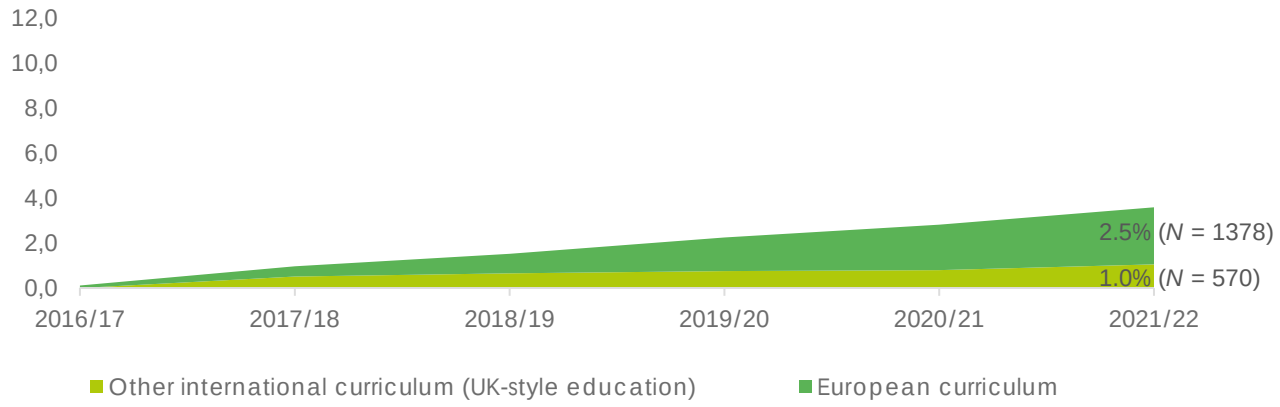
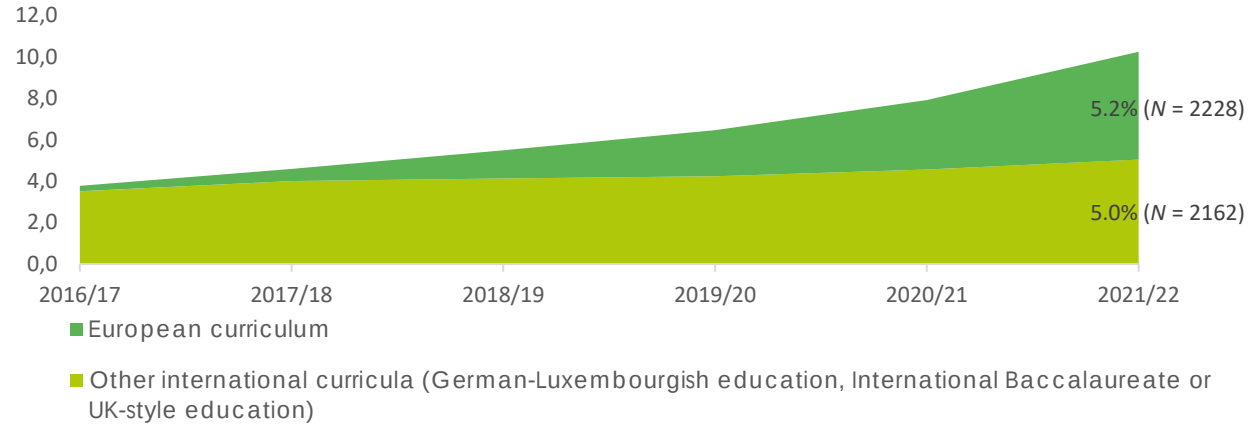


Figure I.6 - Development of Students in International or European Curricula in Public Secondary Schools in %



1.4.1 DEVELOPMENT OF STUDENT POPULATION (SCHOOL YEAR 2016/17 TO 2021/22)

The number of students in the European curriculum in public schools increased significantly in recent years. Since six EPS opened in different locations over a rather short period of time, there has also been a change in the demographic composition of the EPS student population. This section provides a description of the student demographics by curriculum. For the purposes of this report, the comparisons will look at two main groups: (A) public schools following the European curriculum, labelled **EPS**, and (B) public and state-subsidized schools implementing the Luxembourgish curriculum, labelled **Luxembourgish curriculum** in the following. For the sake of completeness, all *Figures* include information on an additional third group, (C) all schools for which administrative student data was available, which includes public schools following other international curricula (e.g., A-Levels) in addition to (A) and (B), labelled **all schools in the data set**. Considering that no administrative student

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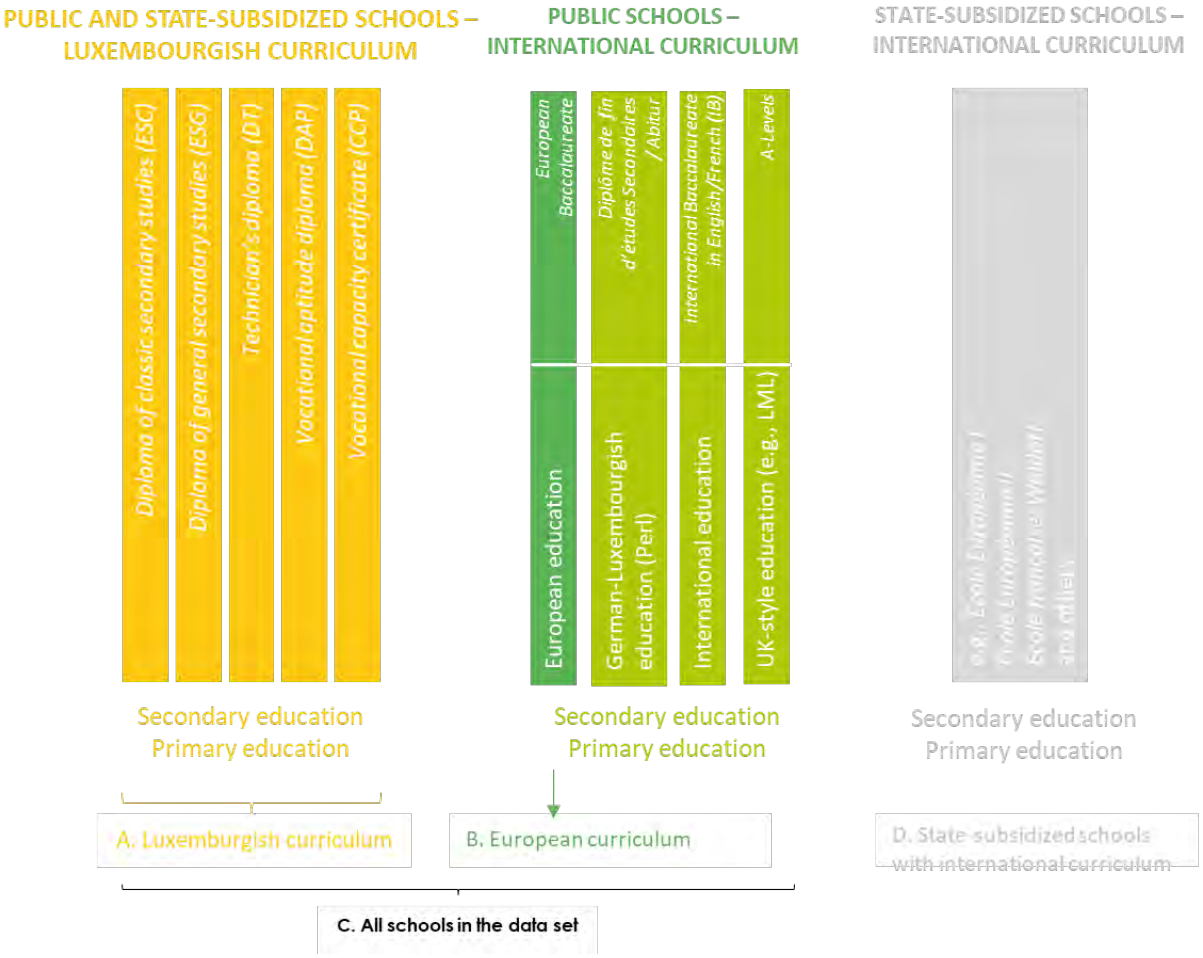
data is available for state-subsidized schools following international curricula (D), those schools are not included in the following analyses (see *Figure I.7* for an overview on the different groups).

Figure I.7 - Overview of the Selection of School Curricula being Compared in the Following Analyses



Plotted in *Figures I.8* and *I.9* are the percentages of those students who mainly speak Luxembourgish or German at home. In primary school, the percentage of Luxembourgish/German speakers in the European curriculum (dark green) increased substantially between the school year 2016/17 and 2017/18 and has remained relatively stable at 11% since then. In comparison to the percentage of Luxembourgish/German speakers in the Luxembourgish curriculum (yellow) or in all schools in the data set (black), the percentage of Luxembourgish/German speakers in the European curriculum is rather low.

In secondary school, there is rather an increase of Luxembourgish/German speakers in the European curriculum between its introduction in the school year 2016/2017 and the school year 2020/2021, but in the last school year (2021/22), this percentage dropped slightly to 15.7%. This means that the percentage of Luxembourgish/German speakers in the European curriculum is also rather low at

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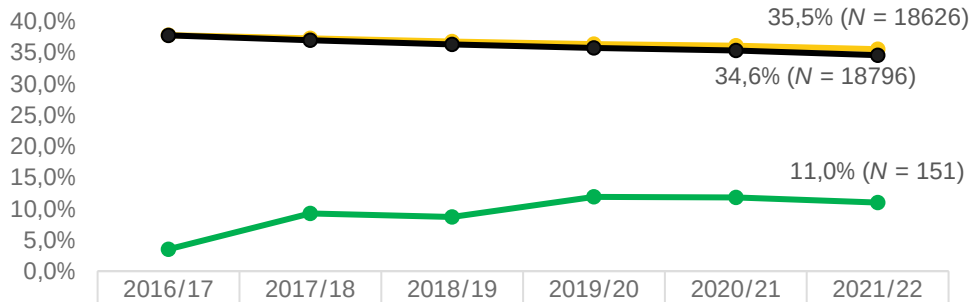
secondary school level in comparison to the share of Luxembourgish/German speakers in the Luxembourgish curriculum.

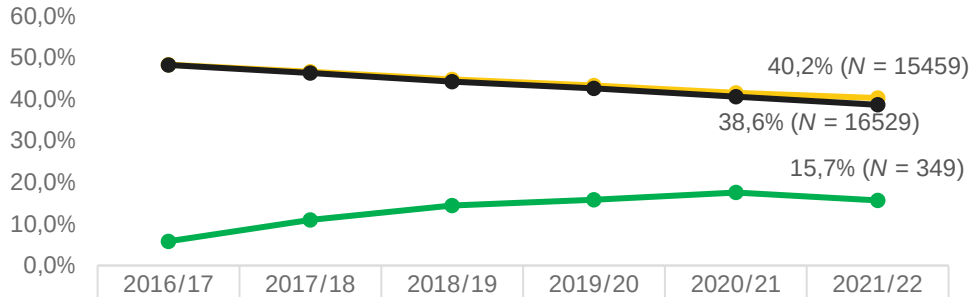
Figure I.8 - Luxembourgish/German Language Primarily Spoken at Home in Primary School by Curriculum in %



	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
European curriculum	3,5%	9,3%	8,7%	11,9%	11,8%	11,0%
Luxembourgish curriculum	37,8%	37,3%	36,8%	36,3%	36,1%	35,5%
All schools in the data set	37,7%	37,0%	36,3%	35,7%	35,3%	34,6%

Note. See *Figure I.7* for an overview of the three categories.

Figure I.9 - Luxembourgish/German Language Primarily Spoken at Home in Secondary School by Curriculum in %



	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
European curriculum	5,8%	11,0%	14,4%	15,8%	17,5%	15,7%
Luxembourgish curriculum	48,2%	46,5%	44,7%	43,2%	41,5%	40,2%
All schools in the data set	48,2%	46,2%	44,2%	42,5%	40,5%	38,6%

Note. See *Figure I.7* for an overview of the three categories.

1.4.2 COMPARISONS OF STUDENT DEMOGRAPHICS BY CURRICULUM (SCHOOL YEAR 2021/22)

At the end of the school year 2021/22, the total number of students enrolled in all schools in the data set was 97.204, of which 90.866 students (93.5%) were enrolled in schools following the Luxembourgish curriculum, and 3.606 (3.7%) were enrolled in EPS. Presented below is the student population composition in regard to gender, nationality, and language primarily spoken at home. *Figure I.10* shows the distribution of students in different school curricula based on their gender.

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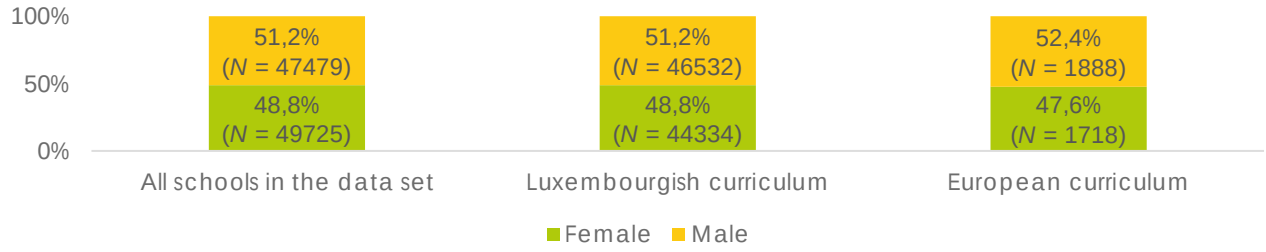
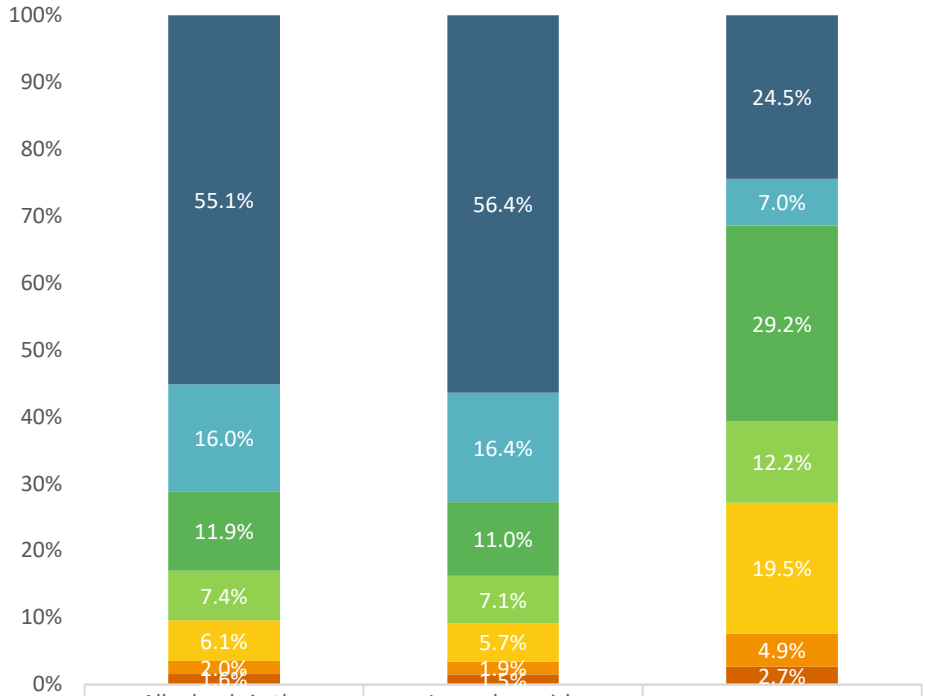
Figure I.10 - Distribution of Students with Respect to Their Gender in Different Curricula (School Year 2021/22)



Note. See *Figure I.7* for an overview of the three categories.

As shown in *Figure I.11*, there are students of different nationalities (i.e., Luxembourgish, French, Portuguese, German, Belgian, other EU, and non-EU) in primary education, with Portuguese students being the biggest group of foreign nationals in schools following the Luxembourgish curriculum. In the EPS, students with a non-EU nationality form the biggest group, followed by French students.

Figure I.11 - Distribution of Students with Respect to Their Nationality in Different Curricula in Primary School (School Year 2021/22)



	All schools in the data set	Luxembourgish curriculum	European curriculum
Luxembourgish	29975	29565	337
Portuguese	8688	8583	96
Other	6466	5750	403
Other EU	4008	3722	168
French	3305	3002	269
Belgian	1081	1003	68
German	849	799	37

Note. See *Figure I.7* for an overview of the three categories.

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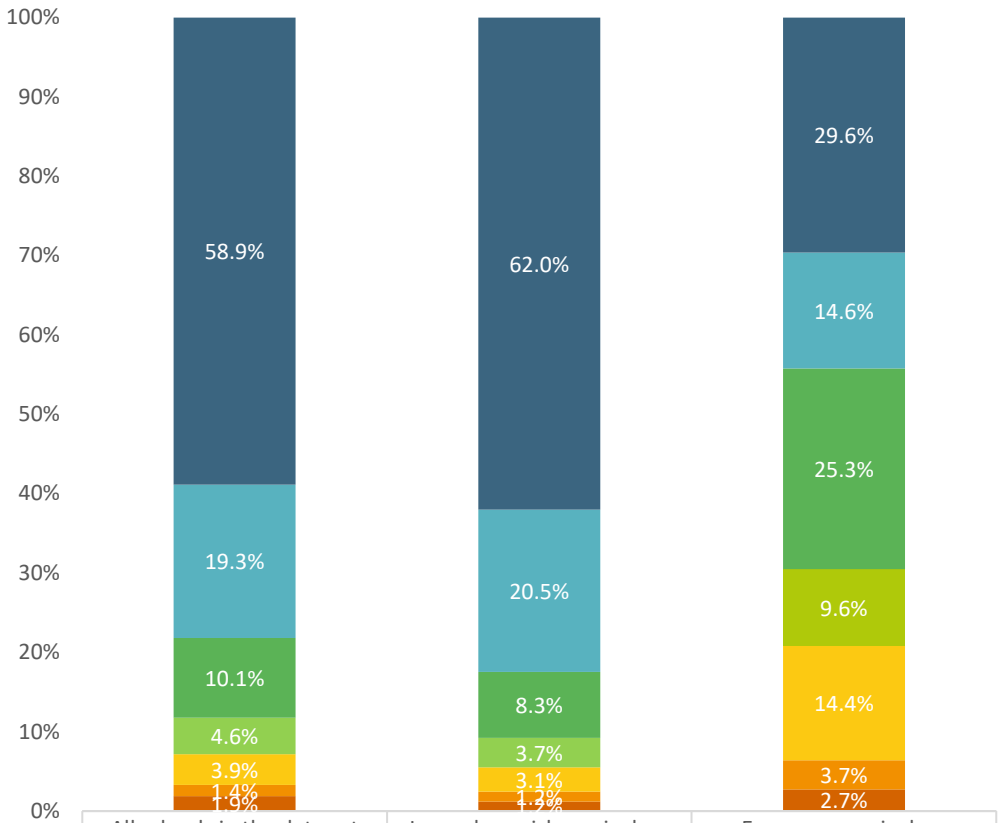
In the school year 2021/22, out of 52.424 students in the Luxembourgish curriculum, 56.4% (*N* = 29.565) were Luxembourgish, 16.4% (*N* = 8.583) were Portuguese, and 11.0% (*N* = 5.750) were of other non-EU nationalities. Alternatively, out of 1.378 primary school students in EPS, 29.2% (*N* = 403) of the students were of other non-EU nationalities, 24.5% (*N* = 337) were Luxembourgish, and 19.5% (*N* = 269) were French.

In secondary schools (see *Figure I.12*), out of 38.442 students in the Luxemburgish curriculum, 62.0% (*N* = 23.840) were Luxembourgish, 20.5% (*N* = 7.867) were Portuguese, and 8.3% (*N* = 3.181) were of other non-EU nationalities. For the EPS, it can be seen that out of 2.228 students, the proportion of Luxembourgish students (29.6%, *N* = 660) was the highest, followed by students of other non-EU nationalities (25.3%, *N* = 564), Portuguese (14.6%, *N* = 325), and French students (14.4%, *N* = 321).

Figure I.12 - Distribution of Students with Respect to their Nationality in Different Curricula among Secondary Schools (School Year 2021/22)



	All schools in the data set	Luxembourgish curriculum	European curriculum
Luxembourgish	25208	23840	660
Portuguese	8273	7867	325
Other	4318	3181	564
Other EU	1965	1435	215
French	1654	1183	321
Belgian	600	479	82
German	814	457	61

Note. See *Figure I.7* for an overview of the three categories.

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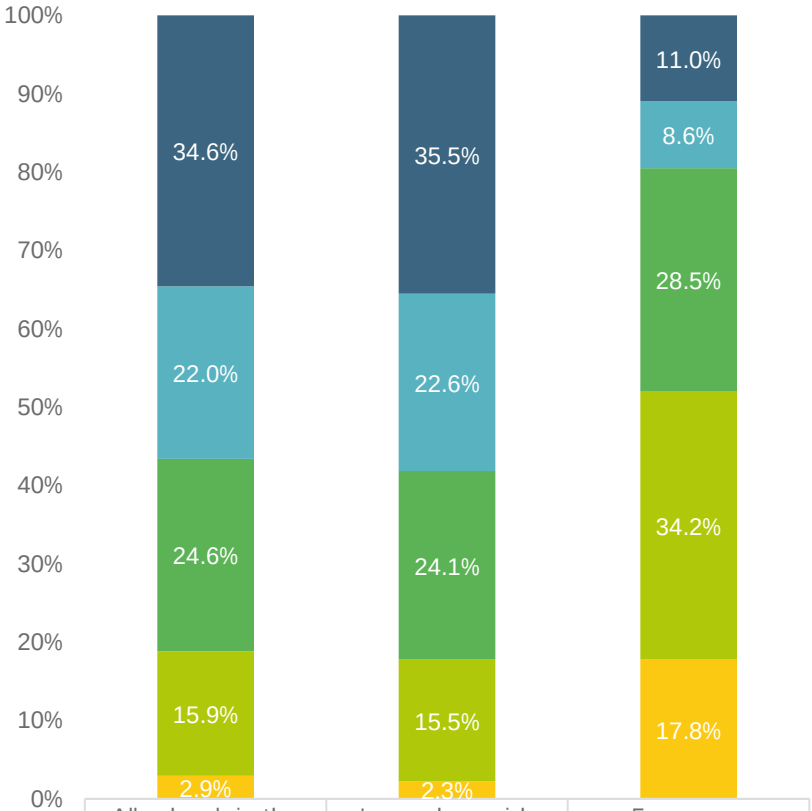
With its high immigration rates and the increasing number of cross-border wage earners, Luxembourg is becoming increasingly multicultural and multilingual. *Figure I.13* presents the distribution of students with respect to the language primarily spoken at home across curricula in primary school. The most prominent language spoken at home was French among students enrolled in EPS (34.2%, *N* = 471), while it was Luxembourgish/German for students taught within the Luxembourgish curriculum (35.5%, *N* = 18626).

Figure I.13 - Language Primarily Spoken at Home in Different Curricula among Primary Schools (School Year 2021/22)



	All schools in the data set	Luxembourgish curriculum	European curriculum
Luxembourgish/German	18796	18626	151
Portuguese	11985	11854	118
Other	13351	12633	393
French	8642	8127	471
English	1598	1184	245

Note. See *Figure I.7* for an overview of the three categories.

Figure I.14 presents the distribution of students concerning language primarily spoken at home across curricula in secondary school. In secondary schools nearly half of the students (43.5%, *N* = 970) enrolled in EPS spoke neither Luxembourgish nor German, French, Portugese, or English as their primary

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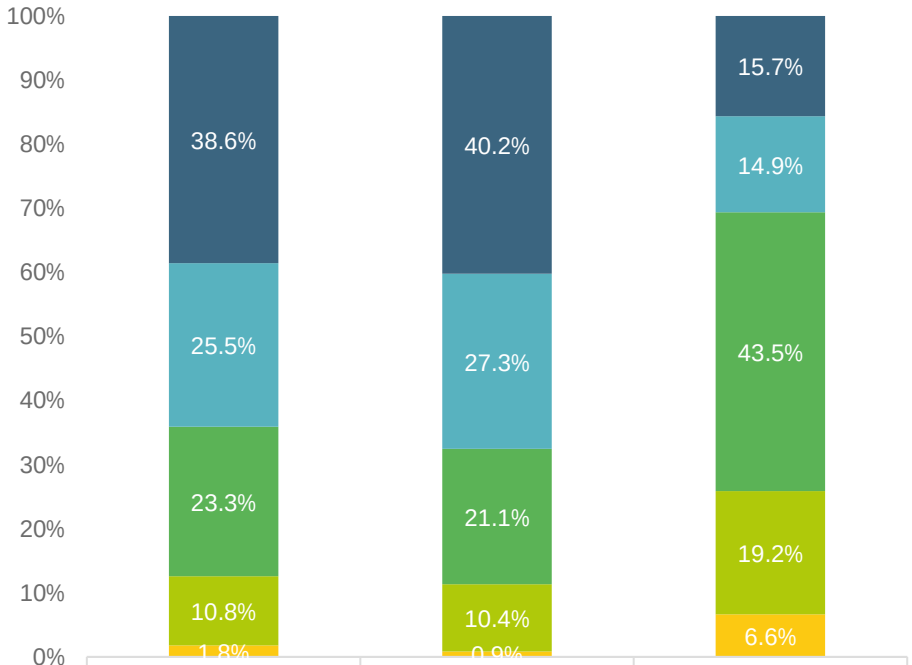
language at home. On the contrary, for 40.2% (*N* = 15.459) of the students taught within the Luxembourgish curriculum, the language mostly spoken at home was Luxembourgish/German.

Figure I.14 - Language Primarily Spoken at Home in Different Curricula in Secondary School (School Year 2021/22)



	All schools in the data set	Luxembourgish curriculum	European curriculum
Luxembourgish/German	16529	15459	349
Portuguese	10931	10505	333
Other	9972	8125	970
French	4637	4017	428
English	763	336	148

Note. See *Figure I.7* for an overview of the three categories.

As presented in *Figures I.13* and *I.14*, students from various linguistic backgrounds attend EPS. Moreover, as aforementioned (see *1.3*), these schools offer primary and secondary education in different language sections, and students are allowed to choose the language section based on their native or dominant language. The distribution of students within the language sections thus differs from one EPS to another, and from primary to secondary education.

The latest National Educational Report shows that Luxembourg is becoming more diverse not only in terms of the migration and language background of its population (LUCET & SCRIPT, 2021), but also in terms of social inequality with an increasing Gini-index (summary measure of income inequality) over time (Statec, 2021). The following figures show the distribution of students' socioeconomic status (SES) across curricula in primary and secondary schools based on data from the Luxembourgish School Monitoring Programme "*Épreuves Standardisées*" (ÉpStan). In previous figures, administrative data at

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the end of the school year 2021/22 were used, while *Figures I.15* and *I.16* use survey data from the annual ÉpStan based on the school year 2022/23, in which not all schools following different international curricula (e.g., German-Luxembourgish education) participate.

Figure I.15 shows that the students' SES (expressed as the highest SES of the parents; HISEI) in EPS at primary school level is higher (with a mean value of 59.8) than the mean HISEI value in schools following the Luxembourgish curriculum (mean value of 50.1). The same holds true for secondary schools where the HISEI value in EPS (51.9) exceeds the value in schools following the Luxembourgish curriculum (44.5).

Figure I.15 - Highest SES of Parents (HISEI Mean Values) in Different Curricula among Primary and Secondary Schools (School Year 2022/23)

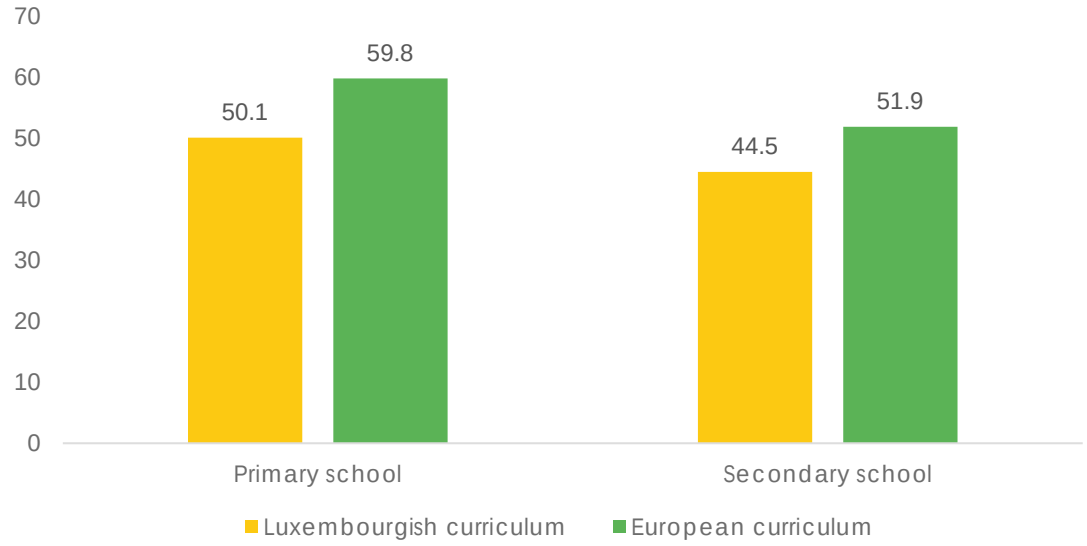

Figure I.16 takes a more detailed look at EPS and shows that there are certainly substantial differences between individual EPS, but despite this, all individual EPS (both at primary and secondary school level) have a higher mean HISEI than all other schools (see *Figure I.15*). These results are consistent with the findings of a study by the *Observatoire de l'enfance, de la Jeunesse et de la Qualité Scolaire* and the Luxembourg Institute of Socio-Economic Research (ONQS, 2022), which compared the average household income of primary schools implementing the Luxembourgish curriculum with the average household income of the four EPS (at primary school level) in Differdange, Junglinster, Luxembourg, and Mondorf-les-Bains. According to their findings, in all school years observed (2016-2019), EPS students came from higher-income families than students in schools following the Luxembourgish curriculum.

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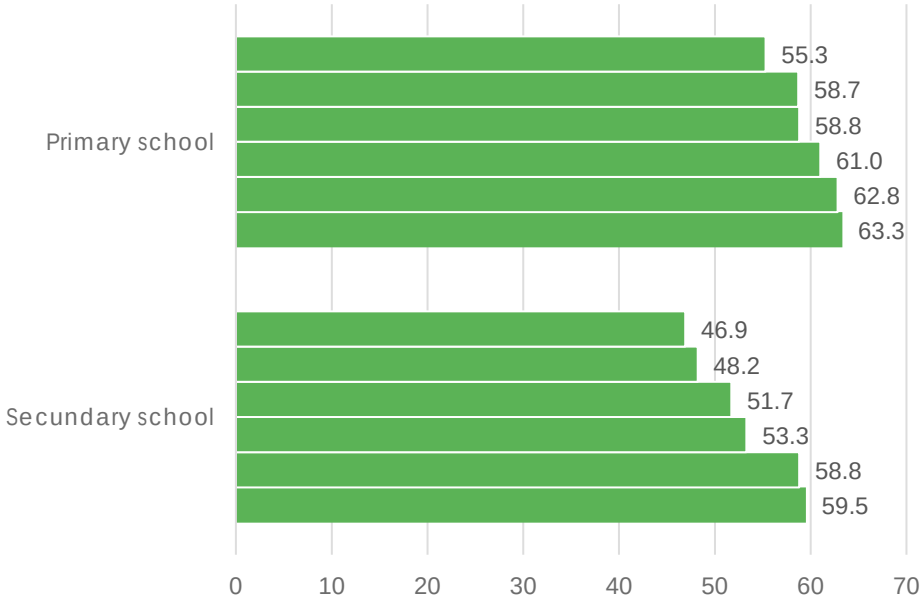
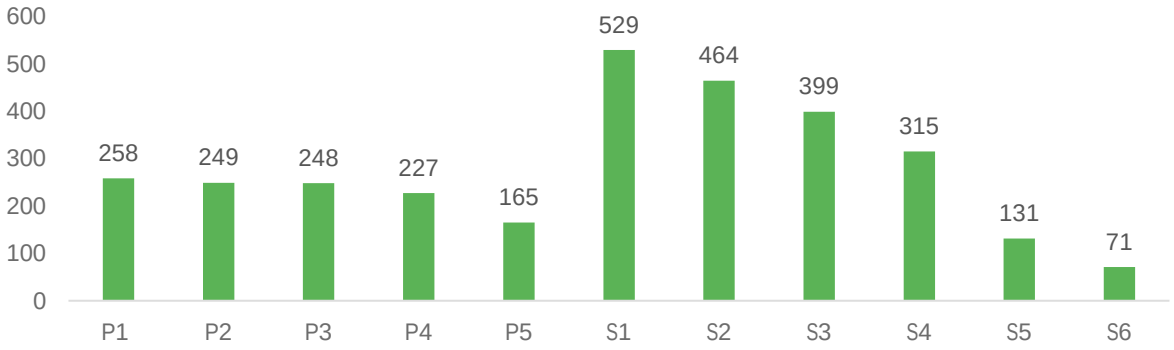
Figure I.16 - Highest SES of Parents (HISEI Mean Values) per European Public School (School Year 2022/23)



1.5 LANGUAGE GROUPS AND LANGUAGE SECTIONS (SCHOOL YEAR 2021/22)

In the following, the distribution of EPS students will be looked at per grade and track for the school year 2021/22. *Figure I.17* shows that most students are enrolled in secondary education and mainly in the lower grades (S1 to S3). It can also be seen that only a few students are enrolled in the final grades of each educational level (P5 in primary school; S5 onwards in secondary school). This is explained by the fact that these schools have only recently opened and therefore each school first opened with classes available in the lower grades in primary (P1-P2) and secondary (S1-S2) education and then successively introduced later grades.

Figure I.17 - Number of Students in European Public Schools in the School Year 2021/22 per Grade (P1-S6)



Note. Students for whom no grade level is specified in the data set are not included here (*N* = 437; this mainly applies to students in a *classe d'acuceil*).

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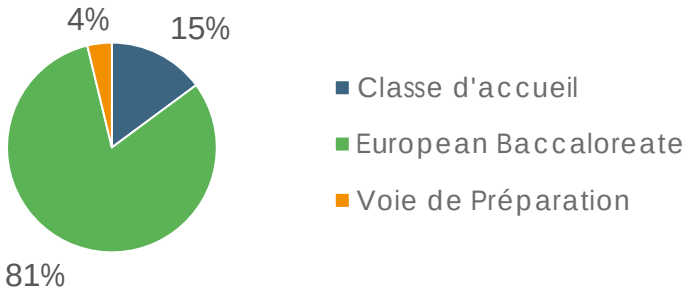
EPS prepare students for the European Baccalaureate according to the European curriculum (see *1.3*). However, some EPS in Luxembourg also offer preparatory classes (*Voie de préparation*) and introductory classes (*Classe d'accueil*; based on schools following the Luxembourgish curriculum). This is reflected in the percentages in *Figure I.18*. Out of the 2.228 students enrolled at the secondary school level of EPS, as to be expected, most students (81%, *N* = 1.813) are enrolled in the track that prepares them for the European Baccaloreate, 15% (*N* = 331) in *Classe d'accueil*, and 4% (*N* = 84) in *Voie de préparation*. Many of the introductory classes are attended by Ukrainian students in the school year 2021/22.[5]

Figure I.18 - Students in Different Tracks at Secondary School Level of European Public Schools (School Year 2021/22)



EPS offer primary and secondary education in three main language sections: English, French, and German. However, there are slight differences among the language offers of these schools. Although the schools offer all language sections in secondary education, EIDE, EIMAB, and EIMLB do not offer German language sections in primary school (see *Table I.4*).

Table I.4 - Language Offers of European Public Schools at Primary and Secondary School Level (School Year 2021/22)

EPS	Language Sections Offered in Primary School			Language Sections Offered in Secondary School		
	English	French	German	English	French	German
EIDE Differdange (est. 2016)	x	x		x	x	x
EIDE Esch-sur-Alzette (est. 2016)	x	x			x	x
EIMLB (est. 2018)	x	x		x	x	x
LESC (est. 2018)	x	x	x	x	x	x
LLIS (est. 2018)	x	x	x	x	x	x
EIMAB (est. 2021)	x	x		x	x	x
EGT (est. 2022)	x	x	x	x	x	x

Note. As EGT was opened in the school year 2022/23, it is not included in the data set and therefore the school is not considered in this section.

Based on the language sections offered, there are some differences in relation to the student compositions per EPS. *Figure I.19* shows the distribution of students based on the language primarily spoken at home in both primary and secondary school level for each EPS in the school year 2021/22.

[5] Further data on Ukrainian students enrolled in Luxembourg's education system for the first time in the school year 2021/22 can be found at the end of this chapter.

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The schools differ slightly from each other based on the language sections offered, especially at primary school level, which is reflected by the languages primarily spoken at home among the students.

- In School I, 44.8% of the students speak French at the primary school level and 22.9% at the secondary school level. On the other hand, 22.7% of primary school students and 41.4% of secondary school students speak other languages. There is also a considerable portion of students speaking English (14.8%, 4.0%), Portuguese (11.9%, 22.6%), and Luxembourgish/German (5.8%, 9.1%) in primary and secondary school, respectively.
- For School II, all students enrolled in primary school speak other languages (100%) whereas only 57.5% speak other languages in secondary school. Besides, there are students speaking English (1.0%), French (10.4%), Portuguese (15.5%), and Luxembourgish/German (15.5%).
- Primary school students in School III show a similar distribution as the ones in School I with 43.5% speaking French, 24.7% speaking other languages, 14.5% speaking English, 9.7% speaking Luxembourgish/German, and 7.5% speaking Portuguese. In contrast, secondary school students in School III have a different distribution with 28.7% speaking other languages, 25.2% speaking French, 25.2% speaking Luxembourgish/German, 14.3% speaking Portuguese, and 6.5% speaking English.
- According to *Figure I.19*, while 32.1% of primary school students speak French, 23.5% speak other languages in School IV. Besides, 21.0% of the students speak Luxembourgish/German, 13.6% speak Portuguese, and 9.9% speak English. In contrast, 23.0% of secondary school students in School IV speak Luxembourgish/German, 37.3% speak other languages, 12.7% speak Portuguese, 22.1% speak French, and 4.9% speak English.
- Finally, in School V, 34.7% of primary school students speak other languages, 29.8% speak English, 17.1% speak Luxembourgish/German, 16.3% speak French, and only 2.2% speak Portuguese. In comparison, 51.7% of secondary school students speak other languages, 20.7% speak Luxembourgish/German, 14.4% speak English, 11.6% speak French, and 1.7% speak Portuguese.

These differences likely stem from the language sections offered by each EPS, the location of the schools, the distance to borders/neighbour countries, and the population composition in the home municipalities of the schools.

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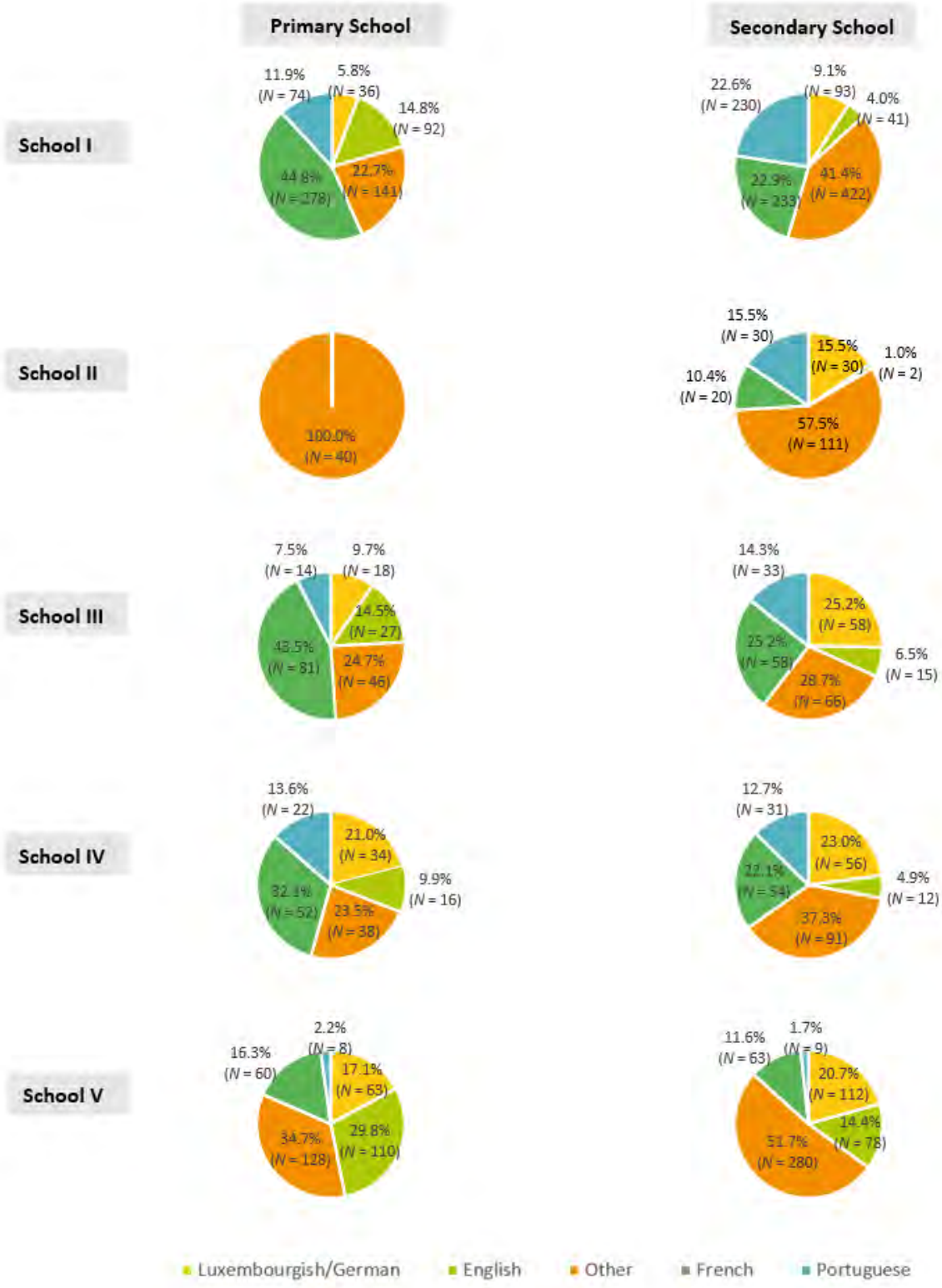
Figure I.19 - Languages Primarily Spoken at Home per European Public School in Primary and Secondary School Level (School Year 2021/22)



Note. School IV and V also implement the Luxembourgish curriculum at the secondary school level. The figure only shows the distribution of the students enrolled in the European Curriculum, and the demographics would be different if students enrolled in the Luxembourgish curriculum were also included.

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Table I.5 shows the students' distribution in terms of their gender, country of birth, nationality, and language primarily spoken at home in the school year 2021/22. It indicates that the percentage of students born in Luxembourg is bigger than that of students born in other countries, except for School I in which 60.5% of its students were born in other countries (non-European, non-EU). However, the country of birth does not mean that the students have the Luxembourgish nationality, and having the nationality does not mean that Luxembourgish is the primarily language spoken at home. Besides, the distribution of students based on their nationality and language primarily spoken at home differs from one school to another. For instance, although 42.7% of the students in School II were born in Luxembourg, only 24.3% of them are Luxembourgish, and 7.9% of them primarily speak Luxembourgish/German at home. On the other hand, 25.3% of the students in School I were born in Luxembourg, of which 17.2% have the Luxembourgish nationality, and 12.9% of them speak primarily Luxembourgish/German at home. Similarly, the distribution of students to language sections differs from one school to another which is partly a result of the available offer of language sections. For example, School II does not have a German language section in primary school, and only 5.4% of the students enrol in the German language section at secondary school level.

Table I.5 - Student Composition per European Public School (School Year 2021/22)

Variable		School I	School II	School III	School IV (LC)*	School IV (EC)*	School V (LC)*	School V (EC)*	Total **
Gender	Male	60.9%	52.1%	53.4%	53.2%	50.2%	65.4%	51.0%	1888
	Female	39.1%	47.9%	46.6%	46.8%	49.8%	34.6%	49.0%	1718
Country of Birth	Luxembourg	25.3%	42.7%	52.6%	78.3%	38.4%	83.0%	42.3%	1519
	France	1.7%	13.6%	12.7%	1.9%	6.7%	0.8%	4.6%	349
	Portugal	6.0%	9.2%	3.8%	8.0%	4.9%	7.5%	1.0%	210
	Belgium	0.4%	2.3%	2.2%	1.2%	10.1%	1.0%	1.3%	101
	Germany	3.0%	1.5%	1.2%	0.4%	1.5%	1.1%	5.7%	94
	UK	0.4%	1.2%	2.6%	0.0%	1.5%	0.2%	3.8%	72
	USA	0.0%	0.9%	0.5%	0.0%	1.5%	0.0%	2.9%	49
	The Netherlands	0.0%	0.0%	1.0%	0.2%	1.0%	0.2%	0.9%	16
	Other	60.5%	22.9%	20.4%	8.5%	27.3%	4.6%	29.3%	979
	Other EU	2.6%	5.8%	2.9%	1.6%	7.1%	1.6%	8.2%	217
Nationality	Luxembourgish	17.2%	24.3%	38.5%	62.9%	32.8%	63.4%	29.2%	997
	French	3.9%	22.6%	19.2%	2.3%	7.9%	2.3%	10.8%	590
	Portuguese	13.3%	18.3%	8.7%	21.2%	9.6%	24.8%	1.6%	421
	Belgian	1.3%	3.4%	3.4%	2.9%	13.5%	1.6%	2.4%	150
	German	3.0%	1.5%	1.9%	0.6%	1.0%	1.5%	6.0%	98
	Other	56.2%	22.0%	21.2%	6.8%	24.9%	4.4%	31.4%	967
	Other EU	5.2%	7.9%	7.2%	3.3%	10.3%	2.0%	18.6%	383
Language Primarily Spoken at Home	French	8.6%	31.2%	33.4%	9.3%	26.1%	9.6%	13.5%	899
	Portuguese	12.9%	18.5%	11.3%	24.3%	13.1%	36.3%	1.9%	451
	English	0.9%	8.1%	10.1%	0.0%	6.9%	1.5%	20.6%	393
	Luxembourgish/German	12.9%	7.9%	18.3%	53.8%	22.2%	39.9%	19.2%	500
	Other	64.8%	34.3%	26.9 %	12.6%	31.8%	12.7%	44.8%	1363
Language Section***	German	17.8%	5.4%	19.6%	0.0%	26.4%	0.0%	29.4%	555
	French	24.5%	63.7%	45.5%	100.0%	43.3%	100.0%	14.2%	1564
	English	6.1%	27.2%	29.1%	0.0%	25.4%	0.0%	45.1%	1063
Number of students in each school		1640	233	416	515	406	612	911	3606

Note. LC = Luxembourgish curriculum. EC = European curriculum.
*School IV and School V implement both the Luxembourgish curriculum and the European curriculum.
** Total in the last column is only reported for the number of students in the European curriculum.

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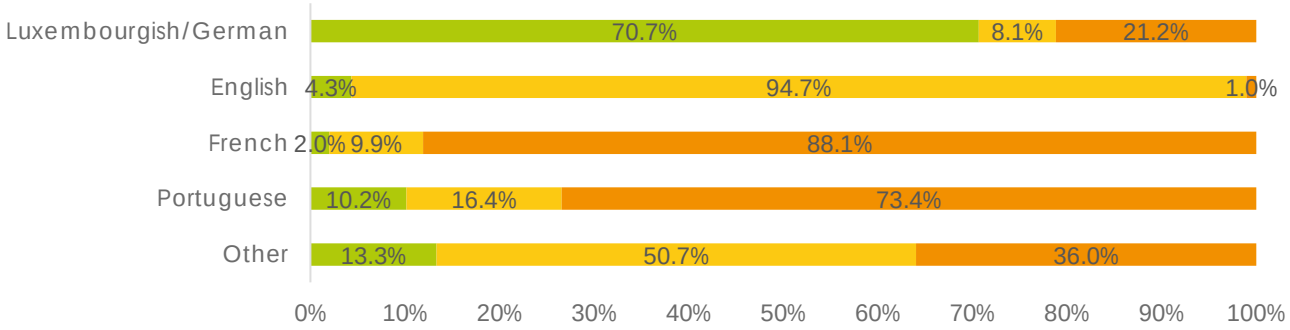
***Language section refers to the language of instruction in EPS, and it corresponds to the L1 or dominant language of the student. By contrast, language of instruction is the terminology used in schools following the Luxembourgish curriculum. The total number of students in different language sections does not add up to the school population. Because, students in an integration class (*Classe d'accueil*) do not belong to a language section, and are therefore not reported for this category/variable.

Figure I.20 - Language Primarily Spoken at Home per Choice of Language Section (School Year 2021/22)



	Other	Portuguese	French	English	Luxembourgish/ German
German section	129	44	18	17	347
English section	491	71	89	372	40
French section	348	318	790	4	104

Note. This figure includes all 3.182 students (3.182 equals to 88% of the students following the European curriculum at primary or secondary school level) who are assigned to one of the three language sections offered. The remaining 12% of students are enrolled in classes for students who are entering the school system for the first time or need support in transitioning to the regular system such as *Classe d'accueil* or *Classe d'initiation professionnelle*.

Figure I.20 shows groups of languages primarily spoken at home the school year 2021/22 (all five EPS combined) per language section. French speaking students attend mainly the French language section (88.1%, *N* = 790) and English speaking students attend primarily the English language section (94.7%, *N* = 372). Interestingly, the Luxembourgish/German speaking students and the Portuguese speaking students show some variations. While 70.7% (*N* = 347) of Luxembourgish/German speaking students attend German language sections, a considerable proportion of Luxembourgish/German speaking students are also found in a language section other than the German one (29.3%, *N* = 144). Similarly, three quarters of the Portuguese speaking students can be found in the French language section (73.4%, *N* = 318), although 16.4% (*N* = 71) are enrolled in the English language section and 10.2% (*N* = 44) are enrolled in the German language section. Since Luxembourgish/German and Portuguese are two major language groups in the entire education system, and these results reveal more fluctuations in relation to their choices of language sections, a closer look at their choices per school level follows.

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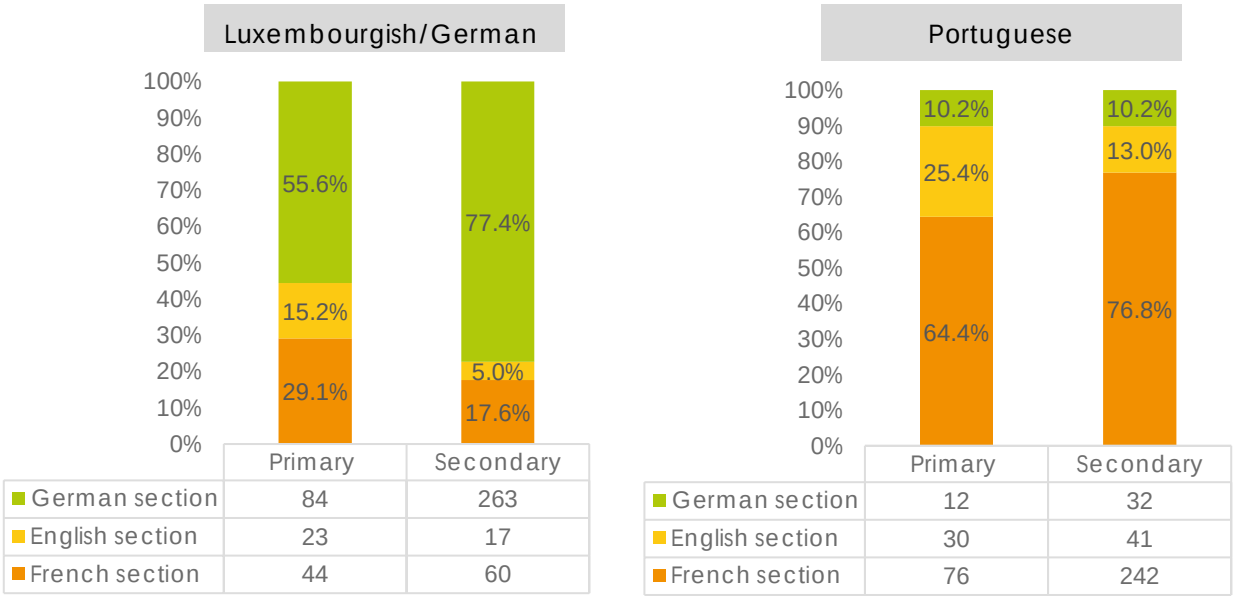
Figure I.21 - Section Choice per School Level by Language Primarily Spoken at Home for Selected Languages (School Year 2021/22)



The majority of the students speaking Luxembourgish/German at home are in the German language section, and about 45% attend the French and English language sections (see *Figure I.21*). The results look different in secondary school: Here, the German language section is the section with the highest proportion of students enrolled (77.4%, *N* = 263). This may be due to the fact that some of the students have completed their primary education in a school following the Luxembourgish curriculum, in which German was the language of literacy acquisition and therefore continue their secondary education in a German language section. These patterns are likely to change once the first cohorts have pursued their entire primary education in EPS and thereafter transition into secondary education at EPS.

In the case of Portuguese speaking students, particularly at primary school level, it is interesting that enrollment in the French language section is not as predominant as might be expected considering the proximity of the languages (i.e., romance languages). 25.4% (*N* = 30) of the Portuguese speaking students are registered in the English language section and 10.2% (*N* = 12) in the German language section.

1.6 CATCHEMENT AREAS OF EUROPEAN PUBLIC SCHOOLS

By the school year 2022/23, the number of EPS had become six across Luxembourg. These schools are scattered across the country, which results in some differences in the schools' catchment areas. The map in *Figure I.22* represents the catchement areas of five EPS based on the proportion of students in each municipality who attend grades offered in the respective EPS.

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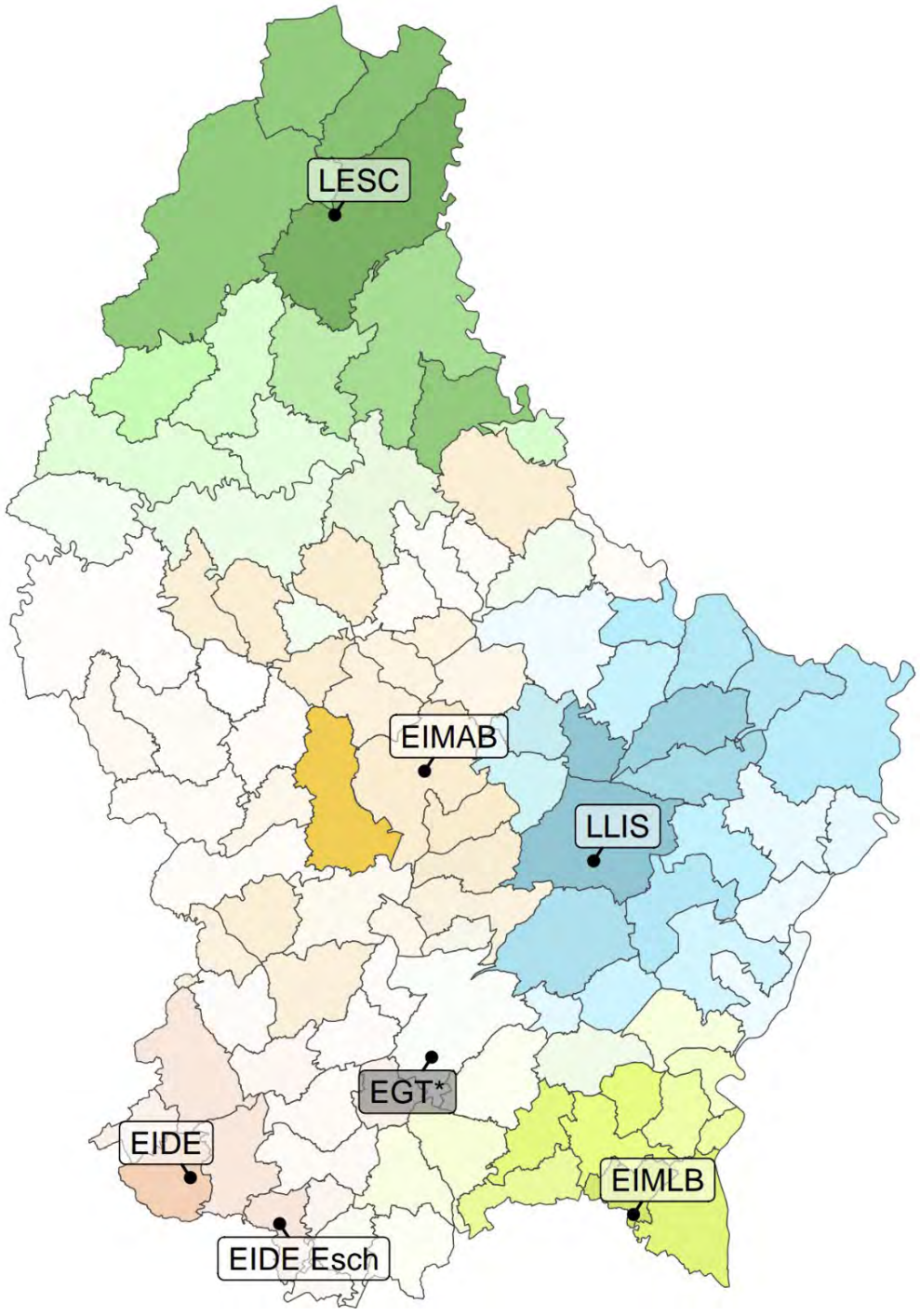
Figure I.22 - The Location and Catchement Areas of European Public Schools in Luxembourg

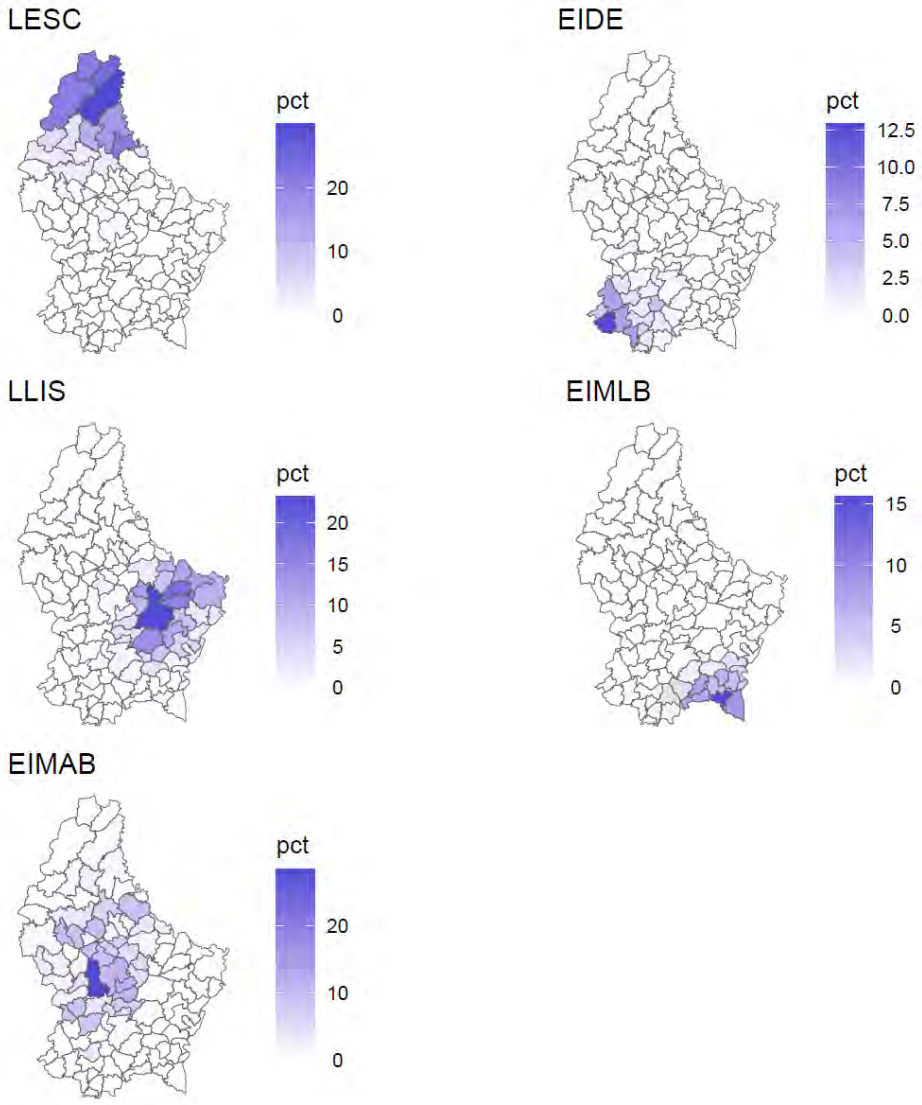


Note. EGT* was opened in the school year 2022/23, so it is not included in the data set. Thus, the attendance rates for this school are not shown on the map.

The maps in *Figure I.23* show in more detail the percentages of students in each municipality who attend EPS. According to the figure, LESC, LLIS, and EIMLB catch proportionally more students than the

other EPS schools in the municipality they are located in (15% to 20%). By contrast, the case is different for EIDE. While EIDE in Differdange catches approximately 12.9% of the students in the eligible grade levels from its home municipality, EIDE in Esch-sur-Alzette catches 6.6% of students, which is proportionally less than other EPS.

Figure I.23 - Map of Municipalities Displaying the Proportion of Students in European Public Schools (School Year 2021/22)



Note. Pct = Percentage. A darker shade of blue represents a higher percentage of students.

Figures I.22 and *I.23* illustrate clearly that some municipalities have little to no students attending any of the EPS. As expected, these are municipalities with a large distance to the nearest EPS. It is also interesting to note that EIMAB attracts the largest percentage of students not from its home municipality, but from the neighboring one.

Having a closer look at the travel distances that students (or their parents) have to make to get to their respective school, *Table I.6* presents the mean distance travelled on a daily basis by students in

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primary and lower secondary schools separately by curriculum. It can be seen that primary school students in EPS travel a much higher distance on average than their peers in schools following the Luxembourgish curriculum.[6] This observation is not surprising, since students who attend a school following the Luxembourg curriculum usually always attend the nearest school. *Table I.6* also shows that the proportion of students who do not live in Luxembourg is proportionally higher in primary EPS (16.5%) than in primary schools following the Luxembourg curriculum (0.4%), even if taking the students into account with no municipality given in the data set (see Missings).

Table I.6 - Mean Travel Distance of Students Enrolled in Different Curricula (School Year 2021/22)

School Level	Curriculum	*N*	Mean distance*	Number of students living abroad (%)	Number of Missings** (%)
Primary schools	European	1147	5.8 km	189 (16.5%)	2 (0.2%)
	Luxembourgish	35250	0.6 km	138 (0.4%)	146 (0.4%)
Secondary schools	European	1392	7.6 km	105 (7.5%)	1 (0.1%)
	Luxembourgish	16877	7.5 km	287 (1.7%)	436 (2.6%)

*The mean travel distance does not include the students living abroad.
** Missings refers to students of which the residing country or municipality is not known.

In secondary schools, the pattern looks different when looking at the mean distances which do not differ a lot.

[6] Travel distance was calculated as the crow flies (straight line distance) between the center of the municipality of residence and the school location which is regarded as the municipality centroid.

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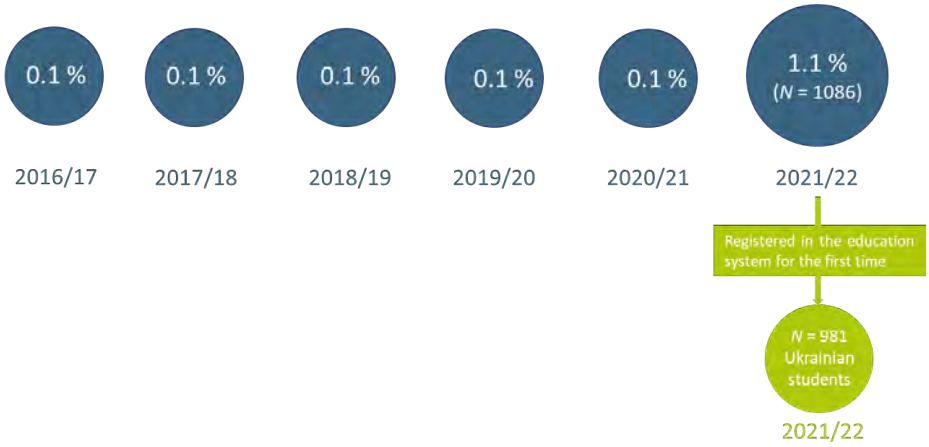
1.7 EXCURSUS: UKRAINIAN STUDENTS IN LUXEMBOURG (SCHOOL YEAR 2021/22)

The war in Ukraine has led to many Ukrainians fleeing their homeland. Some have sought refuge in Luxembourg and the children and adolescents now attend schools in Luxembourg. In the following, Ukrainian students in the Luxembourg education system will be looked at. Questions about the demographics of this student group will be addressed, as well as what types of schools the students are enrolled in and to what extent the EPS are of importance. First of all, it can be stated that the proportion of students with Ukrainian nationality has been at a very low and stable level of about 0.1% in the past years (e.g., *N* = 76 in the school year 2016/17, see *Figure I.2*). As expected, this proportion increased substantially in the school year 2021/22 to 1.1% (*N* = 1.086). In order to focus on those students who were potentially affected by war related migration, the following analyses focus on Ukrainian students (*N* = 981) who were registered in Luxembourg's education system for the first time in the school year 2021/22.[7]

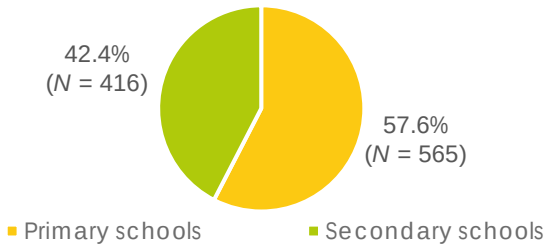
Figure I.24 - Percentage of Ukrainian Students in Luxembourg's Education System Since 2016



Note. Only the students in Luxembourgish curriculum and European curriculum are depicted in this figure as the data set does not include students attending state-subsidized schools that are implementing international curricula (see D in *Figure I.7*).

Among these Ukrainian students, 51.5% (*N* = 505) are female and 48.5% (*N* = 476) are male.

Figure I.25 - Ukrainian Students who were First Enrolled in 2021/22 by School Level



[7] However, a small number of these students may have already lived in Luxembourg and attended a school in the border region, etc.

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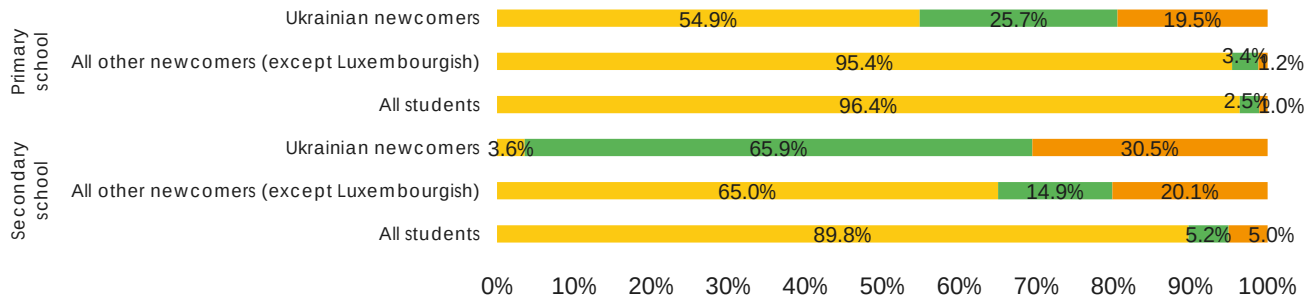
As *Figure I.25* shows, 57.6% of the Ukrainian students who were registered in Luxembourg's education system for the first time in the school year 2021/22 are enrolled in primary education and 42.4% in secondary education.

With regard to curriculum, at primary school level, 54.9% (*N* = 310) of the Ukrainian students who entered the system in the school year 2021/22 were registered in schools that followed the Luxembourgish curriculum, 25.7% (*N* = 145) in EPS and 19.5% (*N* = 110) in schools following another international curriculum (see *Figure I.26*). In comparison to other newcomers in Luxembourg's education system in the school year 2021/22 (with a nationality other than Ukrainian or Luxembourgish), Ukrainian students are more frequently attending EPS or schools following other international curricula.

Figure I.26 - Distribution of Ukrainian Students who were First Enrolled in 2021/22 by Curriculum in Comparison to other Student Groups



	Primary school			Secondary school		
	All students	All other newcomers (except Luxembourgish)	Ukrainian newcomers	All students	All other newcomers (except Luxembourgish)	Ukrainian newcomers
Luxembourgish curriculum	52424	3813	310	38442	604	15
European curriculum	1378	136	145	2228	138	274
Other international curricula	570	48	110	2162	187	127

At secondary school level, while only 3.6% (*N* = 15) of Ukrainian newcomers were registered in schools following the Luxembourgish curriculum, their higher share in EPS (65.9%, *N* = 274) and in schools following other international curricula (30.5%, *N* = 127) becomes even clearer. In fact, the vast majority of the 274 Ukrainian newcomers at secondary school level in EPS are enrolled in so called *Classe d'accueil pour réfugiés ukrainiens* (*N* = 199 students in S1-S3, corresponding to lower secondary education, *N* = 68 students in S4-S7, corresponding to upper secondary school). By comparison, at primary school level, 24.8% (*N* = 36) of the Ukrainian students are registered in the English language section, and for three quarters (75.2%, *N* = 109), there is no language section recorded.

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In conclusion, a closer look at the Ukrainian newcomers in the school year 2021/22 shows that the allocation to one of the three language sections (English, French, or German) does not seem to be the most important reason why these students were enrolled in EPS.

1.8 CONCLUSION AND OUTLOOK

Luxembourg has a diverse context in terms of the socioeconomic, cultural, and linguistic backgrounds of its students. As languages are given a high value in Luxembourgish schools and a correspondingly large place in the curriculum, many students fail due to the challenging language requirements. A relatively new school offer to better deal with the language diversity are the public schools that follow the European curriculum. Since 2016, a total of six EPS have opened in different locations across Luxembourg to provide multicultural and multilingual education leading up to the European Baccalaureate free of charge.

EPS are administered and funded by MENJE and linked to the Accreditation of the European School system concerning the domains of curriculum implementation, offered language sections, pedagogical content, and teacher qualification (Schola Europaea, 2019). Grade levels are organized in three cycles: (1) early education (nursery), (2) primary education (P1-P5), and (3) secondary education (S1-S7). Pedagogical principles include the common core approach until the end of lower secondary school (S3). EPS in Luxembourg offer three language sections (German, French, English) in which students choose their main language (L1) and pursue their educational trajectory mainly in this language.

Since the implementation of the first EPS in 2016, the number of students attending EPS has increased considerably at primary and secondary school level indicating a high demand for the new school offer. Luxembourg has more EPS than the other European countries and, in 2022, hosted the largest EPS in regard to the number of registered students. In the school year 2021/22, most EPS students were enrolled in secondary education – mainly in the lower grades (S1 to S3). Although EPS in Europe in general follow a common core approach in lower secondary education, some EPS in Luxembourg also offer preparatory classes (*Voie de préparation*).

Comparing the student composition in EPS with the student composition in schools following the Luxembourgish curriculum, the following patterns appear: whereas in the school year 2021/22, EPS students primarily spoke French at home in both primary and secondary school levels, in schools following the Luxembourgish curriculum, Luxembourgish/German and Portuguese were the main languages primarily spoken at home. Comparing the socioeconomic status (SES) of EPS students with the SES of students in schools following the Luxembourgish curriculum, data from the ÉpStan show that the mean SES in EPS is higher in both primary and secondary school levels, than among schools following the Luxembourgish curriculum. The same holds true for each EPS when compared to the average SES in other schools. Thus, the EPS student population differs from the population of schools

that are following the Luxembourgish curriculum. As low SES students and students speaking a language other than Luxembourgish or German at home (e.g., Portuguese) have repeatedly been found to struggle academically in schools following the Luxembourgish curriculum (e.g., Boehm et al., 2016; Hornung et al., 2021; Sonnleitner et al., 2021), their lower share in EPS, which might provide them with a better fit in regards to a more continuous language of instruction offer, requires further study. As the above mentioned student groups appear to be taking up the offer of EPS less frequently than high SES students and students that speak another language at home (i.e, French, English), the information and recruiting strategies might need to be adapted.

The distribution of students within the language sections and the students demographic composition differ from one EPS to another. These differences might stem from the location of the schools, the distance to neighbouring countries, and the population composition in the home municipalities of the schools.

Luxembourg's EPS are scattered across the country, with some differences in the schools' catchment areas. Most EPS catch proportionally more students from their home municipalities than from the surrounding areas. EPS students (particularly in primary schools) have to travel further to their school, on average, than their peers in schools following the Luxembourgish curriculum. EPS also attract a higher percentage of cross-border commuters. Some municipalities have little to no students enrolled in any of the EPS (municipalities with a large distance to the nearest EPS).

1.9 LIMITATIONS AND FUTURE RESEARCH

The statistical analyses in this chapter were conducted by using administrative school datasets (Scolaria, *Fichier élèves*) with which the description of the distribution of student demographics differentiated by curriculum is possible. However, missing cases in the variable on students' residence lead to statistical limitations in regard to the calculation of travel distances of the students.

Considering the recent establishment of EPS and thus the relatively small number of cases, there are further limitations to be kept in mind. As EPS students' demographics differ considerably from the student population in schools following the Luxembourgish curriculum, groups of EPS students differentiated by language group are very small. Multivariate analyses, which allow for a more detailed picture, one that considers intersectionalities (e.g., Portuguese students with low SES in comparison with Portuguese students with high SES), are thus not yet feasible.

Because EPS have only recently opened, most EPS students in school year 2021/22 were enrolled in lower grades (in secondary education in S1 to S3; in lower grades in P1 to P4). Information on EPS students' school enrollment in upper secondary education is rare and only based on students in a few schools. As EPS do not offer vocational training in upper secondary school, future research will show if enrollment patterns will remain similar or vary in upper secondary school as more practice oriented

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students may have to leave EPS to pursue a vocational education. This could be especially problematic for students in the English language section of EPS as the language requirements in vocational training differ from the language offer in the EPS.

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REFERENCES

Boehm, B., Ugen, S., Fischbach, A., Keller, U., & Lorphelin, D. (2016). Zusammenfassung der Ergebnisse in Luxemburg. In Ministry of Education, Children and Youth, SCRIPT & University of Luxembourg, LUCET (Eds.), *PISA 2015: Nationaler Bericht Luxemburg* (pp. 4–12). https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/secondaire/pisa-2015-de.pdf

Eurydice (Ed.). (2022, June 21). *Luxembourg overview*. https://eacea.ec.europa.eu/national-policies/eurydice/content/luxembourg_en

Gehring, J. M., Biel, V. J. P., Erpelding, J. P., & Lambert, V. (2022, January 13). *Luxembourg. Encyclopedia Britannica*. https://www.britannica.com/place/Luxembourg

Hornung, C., Wollschläger, R., Keller, U., Esch, P., Muller, C., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 1. und 3. Klasse: Negativer Trend in der Kompetenzentwicklung und kein Erfolg bei Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 44–55). Luxembourg: LUCET & MENJE.

Klein, C. & Peltier, F. (2022). *La démographie luxembourgeoise en chiffres.* Statec. https://statistiques.public.lu/dam-assets/catalogue-publications/en-chiffres/2022/demographie-en-chiffre-22.pdf

LUCET & SCRIPT (Eds.). (2021). *Nationaler Bildungsbericht Luxemburg 2021*. Luxemburg, LUCET & MENJE.

MENJE. (n.d., June 21). *Languages in Luxembourg schools*. https://men.public.lu/en/themes-transversaux/langues-ecole-luxembourgeoise.html

MENJE. (2020). *The Luxembourg education system*. https://men.public.lu/dam-assets/catalogue-publications/divers/informations-generales/the-luxembourg-education-system-en.pdf

MENJE. (2022a). *Education system in Luxembourg key figures 2021-2022.* MENJE. https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/themes-transversaux/220503-enseigenement-chiffres-21-22-en.pdf

MENJE. (2022b, June 21). *International school offer.* MENJE. https://men.public.lu/en/grands-dossiers/systeme-educatif/offre-internationale/fr.html

MENJE. (2022c). *Les chiffres de la rentrée 2022/2023.* MENJE. https://gouvernement.lu/dam-assets/documents/actualites/2022/09-septembre/12-chiffres-rentree/les-chiffres-de-la-rentree-2022-2023.pdf

Observatoire National de la Qualite Scolaire. (2022). *Orientations pour une reduction de l'impact des inegalites d'origine sociale dans le système educatif.* https://men.public.lu/dam-assets/catalogue-publications/rapports-dactivite-du-ministère/autres-rapports/onqs-rapport-thematique-inegalites-sociales-web-single.pdf

• • •

Office of the Secretary-General of the European Schools. (2023a, June 21). *Mission of the European Schools*. https://www.eursc.eu/en/European-Schools/mission

Office of the Secretary-General of the European Schools. (2023b, June 21). *About the Accredited European Schools*. https://www.eursc.eu/en/Accredited-European-Schools/About

Office of the Secretary-General of the European Schools. (2023c, June 21). *Organisation of studies*. https://www.eursc.eu/en/European-Schools/studies/studies-organisation

Schola Europaea (Ed.). (2019). *Regulations on Accredited European Schools*. https://www.eursc.eu/Documents/2019-12-D-12-en-1.pdf

Schola Europaea (Ed.). (2022). *Accredited European Schools: 2022-2023 Data Report*. https://www.eursc.eu/Documents/2022-10-D-48-en-1.pdf

Sonnleitner, P., Krämer, C., Gamo, S., Reichert, M., Keller, U., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 3. und 9. Klasse: Schlechtere Ergebnisse und wirkungslose Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 109–115). Luxembourg: LUCET & MENJE.

STATEC. (2021). Kontext für das Bildungswesen in Luxemburg. In LUCET & SCRIPT, *Nationaler Bildungsbericht Luxemburg 2021* (p. 28 – 31). Luxemburg, LUCET & MENJE.

WEBSITES OF EPS

EIDE Differdange	https://portal.education.lu/eid/
EIDE Esch-sur-Alzette	https://portal.education.lu/eid/
EIMLB	https://www.eimlb.lu/fr/home
LESC	https://www.lesc.lu/
LLIS	https://lensterlycee.lu/
EIMAB	https://www.eimab.lu/

CHAPTER II: STAKEHOLDER FEEDBACK ON EUROPEAN PUBLIC SCHOOLS

PERCEPTIONS ON THE IMPLEMENTATION OF THE EUROPEAN PUBLIC SCHOOL OFFER AND UPTAKE REASONS

Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques (SCRIPT)

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2. STAKEHOLDER FEEDBACK ON EUROPEAN PUBLIC SCHOOLS: PERCEPTIONS ON THE IMPLEMENTATION OF THE EUROPEAN PUBLIC SCHOOL OFFER AND UPTAKE REASONS

SUMMARY

In policy evaluation, stakeholder feedback provides valuable insights into the impact of a policy by providing the real-life experiences of those affected. They can help identify unintended consequences and suggest adjustments to improve the effectiveness of a policy, in this case, the provision of European public schools (EPS). The following chapter adds to the evaluation of the EPS policy the perspective of two groups of actors who are directly affected by the implementation of the policy. These groups are the school management teams who set up the schools, and the parents who choose the schools.

- EPS offer an educational program for an increasing language-diverse demographic, without ignoring the needs of integration and inclusion in the local society. The offer is perceived as complementary to schools following the Luxembourgish curriculum, providing a multilingual education, with the added value of adapting to the linguistic profile of the learners.
- Another positive feature is the evaluation approach, intended to further learning. The integration of primary and secondary education is perceived to allow for smooth transitions and the *tronc commun* in lower secondary education to relieve orientation pressure.
- Aspects identified as requiring further development, include:
    - the quality and quantity of Luxembourgish language teaching,
    - the development of a vocational offer,
    - and better guidance/information for learners and for the school community as a whole.
- Uptake of the offer has been good, with demand exceeding the number of places available. More places are continuously opening up, with new EPS being set up on a regular basis. Most applicants are interested in the French and English language sections, and indicate French or English as the language primarily spoken at home. In proportion to their share of the student population, Indian and French nationals are more likely to apply, whereas Luxembourgish and Portuguese nationals are less likely.
- The main reason why parents choose EPS is the extended linguistic offer. They also appreciate that the offer is free and that their children receive internationally well-known certification. School climate and the schools' academic programs in general are other reasons given by parents.

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- Parents are mostly satisfied with the offer and perceive their children as happy. They consider the schools to be good and feel that their children are integrated with their peers. They would like to see more communication between schools and parents, and to have better access to the schools in terms of transport. They want their children to learn Luxembourg's national languages and therefore request high quality language teaching.

2.1 INTRODUCTION

At the moment of this first and preliminary public policy evaluation of the offer of European public schools (EPS), the policy is still being rolled-out - places in EPS are still increasing, the most recent school opened in 2022 - and no students have graduated yet (the 1st students will graduate in 2023).

At this initial implementation stage of the policy, we considered it essential to include stakeholders in the evaluation process. We have chosen a formative approach in the evaluation, potentially identifying aspects of the policy that could be improved (evaluation-feedback-action loop; Golden, 2020; Scheerens et al., 2003). Consequently, we adopted a mixed-methods approach, including qualitative measures. The latter provide us with additional insight into unintended effects (Biddle, 2017) and give us a fuller picture, including process knowledge. The present evaluation thus aims to add to the evaluation of educational outcomes, which will be investigated more in detail in *Chapter III* (i.e., educational trajectories) and *Chapter IV* (achievement in mathematics).

The interview and the survey data will help us understand how actors of the school community are experiencing the EPS offer. For the present evaluation, we focus on the feedback from:

- The management teams, as the actors actively implementing the policy by setting up the schools,
- The parents, as the choosers of the EPS option.

We conducted interviews with members of the management teams (headmasters/headmistresses or deputy headmasters/headmistresses[8]) of the six EPS and distributed an online questionnaire to all the parents who had children attending EPS at the moment of the evaluation.

[8] Hereafter we will use the term of headmaster to refer to all management members for reasons of confidentiality and readability.

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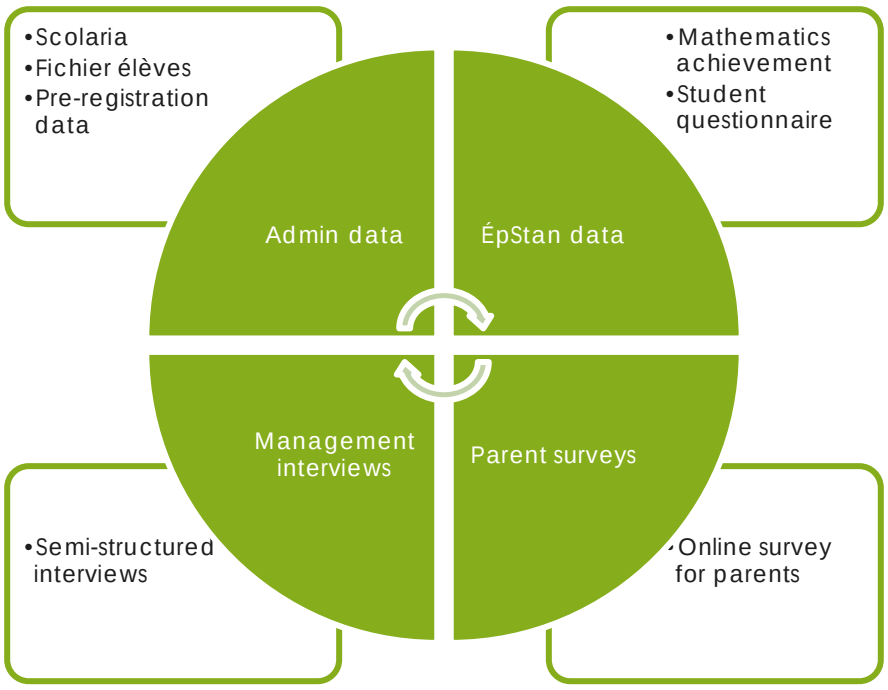
The perceptions of the stakeholders identified above are particularly helpful as long as the student population in EPS has only recently integrated this system, and comes oftentimes from other school systems still. This may affect their academic performance in ways that are difficult to determine. In the future, long-term quantitative outcome data will be available, and make additional policy outcomes' evaluations possible.

Subsequent evaluations should focus on the feedback of the students, as the direct users of the offer, as well as the feedback of the teachers who are key to the smooth continuous operation of EU public school programs.

Figure II.1 - Overview of Multi-methods Approach of the Present Study



Note. Figure adapted from Biddle (2017). ÉpStan = Luxembourg School Monitoring Programme "*Épreuves Standardisées*".

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2.2 CHAPTER OBJECTIVES

The questions we focus on in the present chapter are the following:

1. What exactly are EPS, how is this system implemented?
2. What are the barriers/facilitators to the integration of the EPS system?
3. Which aspects are perceived as the most positive, and which aspects could be adjusted?
4. What is the societal demand for EPS?
5. Why do parents opt for EPS?
6. How satisfied are they, and which aspects need to be adjusted according to their perception?

2.3 METHODS

2.3.1 EXPERT INTERVIEWS

The management teams of the six EPS were identified as relevant stakeholders for the interviews, which investigated the implementation of EPS in Luxembourg from 2016. The interview guide for semi-structured interviews was based on the questions detailed in the chapter objectives (see *2.2*).

The interview guide contained 12 explorative questions, guiding the conversations and leaving room for the interviewee to elaborate. The order of the questions was adapted to the conversation at hand.

INTERVIEW CONTENT

Questions in the interview concerned:

- The characteristics and functioning of the EPS system in general.
- The integration of the EPS system by individual students, barriers, and facilitators.
- Challenges and development perspectives as well as the most positive aspects of EPS.

The first interview with an EPS headmaster was conducted in March 2022. This interview allowed the adaptation of the interview guide for the target group to ensure that all questions were easily understood. The other five management teams were invited to participate by e-mail in April 2022.

The interviews took place at the interviewees' schools in-between May and July of 2022, depending on their availabilities. After obtaining the interviewees' consent, the interviews were recorded using an audio recorder. The interviews lasted on average 76 minutes. They were mostly

guided by the interview guide; however, the interviewees could elaborate on any related topic they wished to talk about. This allowed to get a more complete picture of the experts' perceptions.

The audio recordings of all six interviews were then transcribed *smooth verbatim* (i.e., omission of hesitation pauses). The transcriptions were saved with password protection and passages identifying individual interviewees were anonymized.

ANALYSIS

The transcriptions were analysed using thematic content analysis (Mayring, 1991). Thematic content analysis is a method for analyzing and interpreting the content of qualitative data, such as interviews.

The data was first explored inductively, identifying different ideas, using descriptive labels (codes). The codes were organized into categories (themes). In a second step, themes most relevant for the present chapter's research questions were focused on. The selected themes pertained to *system characteristics and operation*, *changing systems* and *system development, challenges and positive aspects*.

The codes were then reviewed and regrouped where necessary. A codebook with the relevant categories and codes was established. Finally, all the interviews were recoded deductively, confronting the data to the coding as defined in the codebook. The codes were re-arranged inside each category by frequency of occurrence (ideas that came up more often were given more importance in the analysis).

2.3.2 PRE-REGISTRATION DATA

To illustrate the interest in EPS, we considered the data of the pre-registration process of the EPS. Pre-registration was done via an online form and the deadline was March 18th, 2022.

2.3.3 PARENT QUESTIONNAIRE

An online questionnaire was designed and an access link sent out to the parents of all students in five EPS (EIGT parents are not included in the present analysis, since at the time of the evaluation, the school was not open yet). It contained questions about the respondents themselves, their reasons for choosing an EPS for their child, and their satisfaction with the EPS.

The content of the questionnaire was based on aspects identified in the literature as influencing school choice (i.e. Goldring & Phillips, 2008; Holmes Erickson, 2017) and provided also open fields so as to be as explorative as possible in this early stage of the EPS offer operation in Luxembourg.

PROCEDURE

The questionnaire was implemented in Evasys (https://evasys.de), an evaluation software, providing online survey possibilities. The link leading to the online survey was sent out by the management teams of the five EPS to all parents of the school year 2021/22 students. The questionnaire was open from June until August 2022, and the invitations were sent out at the beginning of June, to a potential 2.451 participants that could answer the survey questions anonymously. The questionnaire was available to the participants in four languages, namely English, French, Portuguese, and German.

ANALYSIS

The analysis of the questionnaire results are mostly descriptive response frequencies. The open questions have been analysed qualitatively, using coding and reporting the most frequent and relevant categories.

2.4 PERCEPTION OF THE SCHOOL MANAGEMENT: EXPERT INTERVIEWS

This section presents the results of the analysis from the expert interviews. The findings reflect the perceptions of the EPS by the school management teams who set them up. Ideas and concepts that were mentioned more frequently, are considered to be the most important in this analysis. Moreover, ideas that seem particularly relevant in the present evaluation context are also highlighted.

Each of the six individual interviews in this chapter contributes to the richness of the present analysis, but it should be kept in mind that the positions of EPS headmasters may vary and that the analysis is not a reflection of the positions of EPS' management as a whole.

The participants in the expert interviews were headmasters of the following schools:

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Table II.1 – European Public Schools in Luxembourg

Full name of the school	Abbreviation
École internationale, Differdange and Esch/Alzette	EIDE
École internationale Gaston Thorn	EIGT
École internationale Mersch Anne Beffort	EIMAB
École internationale de Mondorf-les-Bains	EIMLB
Lënster Lycée International School	LLIS
Lycée Edward Steichen Clervaux	LESC

2.4.1 CHARACTERISTICS AND FUNCTIONING OF EUROPEAN PUBLIC SCHOOLS

SYSTEM CONCEPT

LANGUAGE(S)

All interviewees raised the topic of language(s) when reflecting on the EPS offer. The headmasters emphasized that their pedagogical offer is a multilingual offer, with one language clearly defined as the main language of instruction. The language profile of the learner determines the language section, and consequently, the language of literacy acquisition. The students must choose two more languages over the course of their school career. Additionally, the students are taught Luxembourgish. With the exception of the language of the language section, all other languages are taught as foreign languages.

Vill Leit menge, mir kéinten de Schüler einfach lo, ok gutt, ech si Lëtzebuerger, ech hätt gären, datt mäi Kand franséisch enseignéiert gëtt vun S1 un, vum éischte Joer vum Secondaire, dat geet natierlech net, also et ginn Reegelen, nodeems een eng éischt Sprooch, eng zweet Sprooch, eng drëtt Sprooch also dat ass net ee Menu à la carte, mee dat huet mat der Scolarisatioun vum Kand ze doen, mat senge sproochlechen Stäerkten ze doen.

Wat mache mir hei, ma mir ginn de Kanner déi beschtméiglech Formatioun, Ausbildung an deene Sproochen déi si matbréngen, wou d'Elteren doheem och hëllefe kënnen, a mir bréngen se esou wäit wéi méiglech an am Beschten mat engem Diplom.

• • •

Headmasters felt that the system is adapted to the language profiles of the local student population by allowing flexibility in:

- the choice of languages and
- the importance/weight given to the individual languages.

D'Iddi, dass de Sproocheprofill individuell un de Schüler adaptéiert gëtt, wat jo nëmme richteg ass, et keeft ee jo och net engem 6 jähregen e Velo mat engem Cader fir en Erwuessenen, du adaptéiers jo de Vehikel.

In secondary education, the EPS system switches the language of instruction in content subjects to the learner's second language. However, in contrast to schools following the Luxembourgish curriculum, there is no such language switch in mathematics.

ACCREDITATION

When talking about the EPS offer, the interviewees mentioned different requirements for accreditation (*by the Board of Governors of the European Schools[9]). These include the program (European curriculum) as well as certification (European Baccalaureate), evaluation, and promotion criteria. To assess the application of these requirements, schools are subject to regular external evaluations by Inspectors[10].

SYSTEM STRUCTURE

Another topic that was frequently mentioned was the system's structure. It was highlighted that the EPS system has a so-called *tronc commun* in lower secondary education (until S3 – third year of secondary education), meaning that they do not divide their student population in different school tracks as is typical for schools following the Luxembourgish curriculum (ESC - *Enseignement secondaire classique*; ESG - *Enseignement secondaire général* subdivision, i.e. Hadjar & Backes, 2021; ONQS, 2020).

Another characteristic is that EPS include both primary and secondary education, providing a coherent offer to students and allowing for smooth transitions.

[9] The * marks information added by the authors for a better understanding.
[10] More information on the accreditation procedure of European Schools can be found here: https://www.eursc.eu/en/Accredited-European-Schools/accreditation-procedure

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Mir hunn de Schüler vun deem Moment un, wou e scolariséiert gëtt bis hannen, wou en den Diplom kritt, kënne mir en iwwert de ganze Wee begleeden, wat spezifesch ass, dass mir déi Transitiounen gutt kënne gestalten vun 4 bis 18 Joer.

In reference to supporting students experiencing learning difficulties, it was mentioned that the EPS system includes three levels of support if a student is struggling (including in languages), going from a more punctual approach to a broader support approach. The collaboration with the national *Centres de compétence* was also mentioned by one headmaster, as well as school-internal multiprofessional support teams. Moreover, it is felt that adapting to the student's language profile may reduce the number of students with difficulties.

Also, ech mengen, doduerch dass de déi Sproochen op dem Niveau L1, L2, L3 hues, dat ass well eng grouss Diversifikatioun, well dat hëllt ganz vill Appui ewech, gleeft mir et, an dann si mir eng Schoul, déi ganz vill differenzéiert.

It was additionally punctuated that the system requirements allow (and necessitate) the development of different additional school concepts.

*En (*EPS system) ass e sou schmuel gehalen, dass eigentlech jiddereeen, oder all Schoul en eegent Konzept dodrobber grefféieren kann. An där Hinsicht gëtt en esouvill vir, wi néideg ass fir gutt ze funktionnéieren, e léisst awer och d'Plaz, d'Zäit an de Raum, fir dass all Schoul eng eegen Identitéit, en eegent Konzept an eege Projeten kann dodranner setzen. Dat ass eng Méiglechkeet, déi e léisst, t'ass awer och eng Verpflichtung amfong, déi e gëtt.*

Finally, the EPS offer is considered to be academic in nature. Hence, it does not include a vocational track.

ACCESS

The EPS being by definition public, the access to these schools is both universal and free of charge.

SIMILARITIES TO SCHOOLS FOLLOWING THE LUXEMBOURGISH CURRICULUM

Ech hat ëmmer d'Gefill, datt d'Europaschoul amfong geholl dat, wat mir am nationale System denken, eigentlech intelligent weiderentwéckelt huet.

Throughout the interviews, the proximity of the EPS system to schools following the Luxembourgish curriculum was pointed out. Besides mentioning that the historic origin of the EPS system was in

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Luxembourg, the perceived similarities mainly alluded to language learning, notably: the multilingual requirements, the language level expectations, and the switch in instruction language in content subjects.

Dobäi gehéiert awer och, datt et ee System ass, dee multilingue ass. Et ass kee System, wou een an der Sproochesektioun ass, an dann ass et déi Sprooch an dann fäerdeg. Dat heescht, et ass gläichzäiteg ee System, dee Wert op eng éicht an eng zweet Friemsprooch leet, an da si mir rëm ganz no beim Lëtzebuerger System. Mais wou d'Friemsprooche wierklech als Friemsproochen ënnerriicht ginn, och mat bëssen enger anerer Approche.

The EPS system is largely seen as complementary to schools following the Luxembourgish curriculum.

Déi Complémentaritéit, dat Ergänzen, an net déi Konkurrenz, den internationale System ergänzt den Lëtzebuergeschen komplett.

LUXEMBOURGISH SPECIFICITY IN EPS

As being specific to the EPS in Luxembourg, the interviewees mentioned the limitation of language sections to Luxembourg's national languages plus English. This restriction aims to integrate the students into the local/national community, where Luxembourgish, French, and German are widely spoken.

An déi kommen also an dës Schoul, an déi ëffentlech Schoul, well se eng besser Integratioun vun de Kanner wëllen, well se ebe soen, mir ginn net zréck, mir bleiwen, a mir wëllen, datt eis Kanner hei integréiert ginn an déi Integratiounsleeschtung, mengen ech, ass eng Spezifizitéit net nëmmen vun dëser Schoul mee vun all den accréditéierten Europaschoule, well se eben école publique sinn a well se d'Kanner besser op déi Gesellschaft virbereeden, déi se hunn.

EUROPEAN VALUES AND TEACHER DIVERSITY

Other system features mentioned were the inclusion of European values in the EPS offer and the diversity of teacher backgrounds in culture, education, and working conditions.

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TARGET POPULATION

Two aspects were brought up when talking about the student population targeted by EPS:

- the language offer: the target population consists of children who struggle in schools following the Luxembourgish curriculum due to their language profile.
- the regional catchment area: the target population are children living in the vicinity of the school. The school population should reflect the local mix in the population.

(...) Kanner, déi Problemer hunn, hiert vollt Potential z'entwéckele, well se op Däitsch alphabétiséiert ginn (...), dat war als déi Offer geduecht, fir méi Kanner et z'erméiglechen, hiert Potential esou gutt wéi et geet auszeschöpfen. Dat ass den Optrag fir d'Europaschoul, sou wéi ech e verstanen hunn.

DEMAND

EXCEEDS OFFER

Almost all EPS are confronted with a demand that exceeds the availability of places (see also *2.5*).

LANGUAGE SECTION VARIATION

Demand varies among language sections and was felt to be determined by the geographical location of the schools.

Also t'ass all Joers e Choix ze treffen, t'ass bei der franséischsproochege Sektioun ass et am heftegsten. Op der Däitschsproocheger ass et net grad sou schlëmm, mee do musse mer och nach e Choix treffen, bei der engleschsproocheger Sektioun ass et bësschen ofhängeg, am Secondaire hate mer bis lo amfong weider keng Probleemer, am Primaire awer sinn d'Klassen do och ganz voll.

SELECTION CRITERIA

STUDENT PROFILE

The most often mentioned selection criteria related directly to the profiles of the prospective students. The headmasters most often cited language profile saying it was important that the student was proficient in the chosen section language, in order to remove language barriers.

• • •

Mir kucken, beim Secondaire virun allem, dass de Kanner net zousätzlech Steng an de Wee geluecht ginn, d.h., dass dee Sproocheprofill, deen d'Eltren präsentéiert hunn an hierem Dossier, dass deen och reell ass. Wann e Kand nach nie a Kontakt war mat Englesch, soen ech elo mol, an d'Eltren insistéieren, fir en op déi englesch Sektioun ze schreiwen, dat ass net de Sënn vun där hei Schoul, et ass keng Sproocheschoul. Et soll schonn deene Kanner zougutt kommen, déi och mam Bagage dohinner kommen, an et hinnen och erméiglecht, vun do weiderzekommen.

Relatedly, they said that the academic profile in general must fit, so that it is realistic for the student to be able to pursue an academic track and succeed the European Baccalaureate. In the same logic, the *décision d'orientation* should be ESG or ESC, and the previous educational cycle should be completed (kindergarten for primary education and primary for secondary education).

More generally it was stated that decisions are taken with the child's best interest in mind (in the limit of available places) and one consideration was that the specific school offer was the best available fit.

FAMILY

Other selection criteria that were frequently mentioned were family-related. Here children had better chances to be accepted if their sibling(s) were already attending this specific school. Else, the family project was considered, for instance in the case of families being in Luxembourg for a short period of time, thus having a need for an international education.

RESIDENCE

In order to avoid long commutes, children that live closer to the EPS are said to be prioritized.

2.4.2 INTEGRATING THE EUROPEAN PUBLIC SCHOOL SYSTEM, BARRIERS AND FACILITATORS

MOMENTS OF CHANGE

AVAILABILITY OF PLACES (TO EPS)

Due to the high demand of the EPS offer, the moments of when students most often change to an EPS are largely determined be the opening of places. Major intake moments are therefore determined to be at the beginning of an educational cycle (kindergarten, primary or secondary).

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VOCATIONAL TRACK (TO SCHOOLS FOLLOWING THE LUXEMBOURGISH CURRICULUM)

As for changing from an EPS to schools following the Luxembourgish curriculum, students most likely change after S3 if the academic system of the EPS proves to be an inadequate fit for the student. At this moment, the student will be re-oriented into a school following the Luxembourgish curriculum, if his/her language profile allows.

FACILITATORS AND BARRIERS

Figure II.2 - Factors that Facilitate a Student's Change of Systems

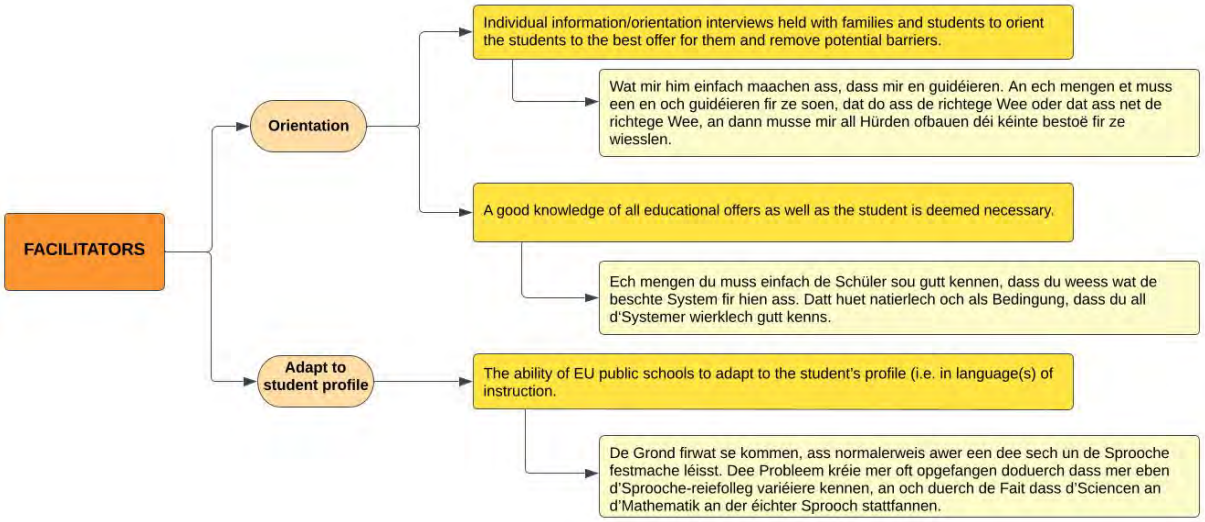
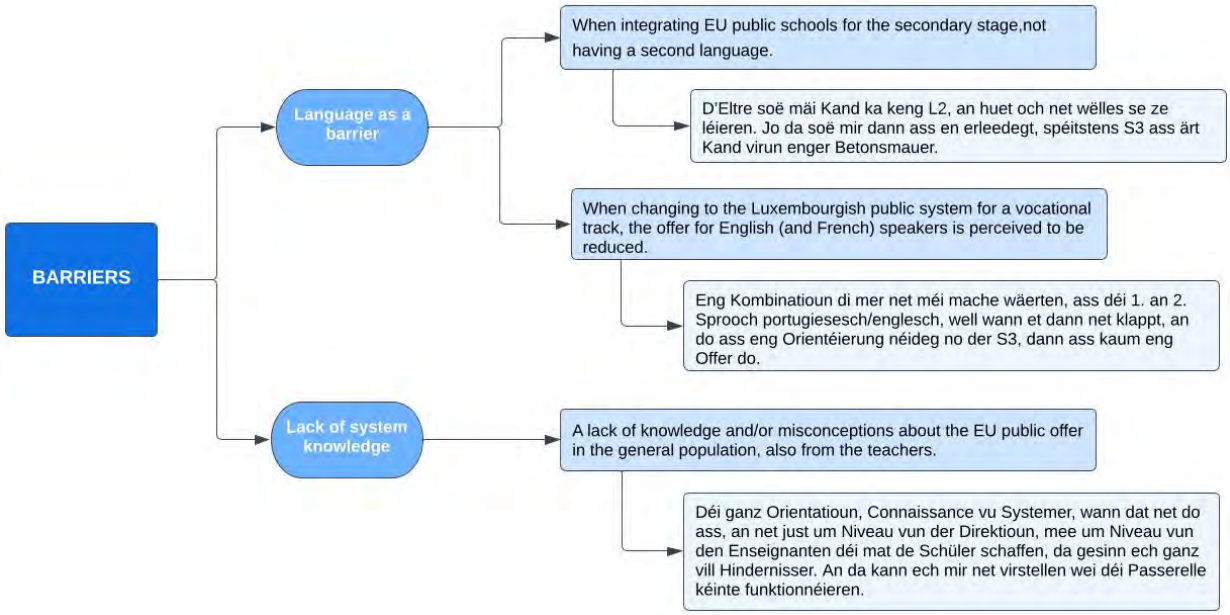


Figure II.3 - Factors that Hinder a Student's Change of Systems



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2.4.3 CHALLENGES, MOST POSITIVE ASPECTS AND DEVELOPMENT PERSPECTIVES

CHALLENGES

LACK OF SYSTEM KNOWLEDGE

The challenge the headmasters of the EPS brought up most often was a lack of knowledge about the EPS offer (and also about schools following the Luxembourgish curriculum) by members of the education community (see also *Figure II.3*).

The interviewees felt they needed to devote a lot of effort to information and orientation work in order to:

- improve the orientation process in the interest of the student,
- assure that potential students and their parents can make an informed decision.

An dat ass am Fong, deen Entretien ass immens zäitopwänneg, immens stresseg, et ass wierklech immens vill Arbescht, mee dann ass et duerno fir Jiddferee kloër, da wëssen d'Eltren, op wat se sech aloossen, vlait hu se sech eppes Anescht virgestallt, oder net, an ech mengen mir haten do lo keng gréisser Probleemer am Ufank, dass dat lo net soll gange sinn. Wéinst den Entretienen.

To overcome prejudices and misconceptions about the EPS offer specifically and make sure that the EPS were considered as a complementary offer, these information efforts were targeted at the educational community as a whole, including teachers of both systems.

OFFER RIGIDITY

One of the challenges mentioned was related to the offer itself and the regulations that were sometimes viewed as rigid. These regulations, determined by the accreditation status of the European School, made it difficult to integrate some student profiles, such as older children that are monolingual. It was also mentioned that the EPS system had high academic expectations, which was considered a challenge in schools that are inclusive.

MULTIPLE OFFERS IN SAME SCHOOL

Integrating different offers in the same school was also perceived as a challenge, specifically responding to the different requirements of both systems (i.e., European and Luxembourgish).

• • •

Dat ass een alldeeglechen Challenge, fir ze kucke, wat sinn op béide Säiten d'Exigenzen, wat sinn d'Obligatiounen, wat musse mir ëmsetzen vum nationale System hier, vum europäesche System hier, an den Challenge ass wierklech, wéi kréie mir déi Zwee beieneen.

But, having both offers in the same school was also seen as positive in the way that it allowed choosing the best aspects of both offers for their students.

Relatedly, it was mentioned that teacher expectations, particularly in their evaluation approach, tended to differ, and thus bringing them closer together to some extent was necessary.

NOT ENOUGH TIME

One challenge that was brought up was managing schools that grew at a very rapid pace, which left the management teams dealing with rapidly growing student and teacher bodies, while their schools were in full development.

SCHOOL TRANSPORT

A very practical challenge that was brought up was school transport in some schools. This was true especially for primary school students (this challenge is also perceived by the parents, see *2.6*).

POSITIVE ASPECTS

LANGUAGES(S) RELATED

The topic of language management, despite being a specific feature of the EPS offer, was coded apart because of the frequency with which it was mentioned, and the different aspects of it.

Interviewees stressed that the flexibility in the choice of the 1st language (L1) as well as the foreign languages was among the most positive aspects of the offer. This flexibility allows for the adaptation of the multilingual educational offer to the language profiles of the children by choosing the language of instruction and weighing the importance of foreign languages.

Therefore, the headmasters considered this model to improve equity in a diverse population and thus to be adapted to the Luxembourgish reality.

Déi europäesch Offer ass natierlech och sur place eng Valeur ajoutée, well se et erlabt net nëmmen um Pabeier, mee och en Réalité, d'Kanner do ofzehuele, wou se stinn. Dat ass e Slogan,

• • •

deen ech net gäre benotze, well ech fannen, dass en zevill inflationär benotzt ginn ass an nie gestëmmt huet, mee mir hunn awer déi Situatioun hei am Land, dass an de Stéit doheem ganz ënnerschiddlech Sprooche geschwat ginn.

Furthermore, the headmasters noted positively that the instruction language was not switched in mathematics, allowing the students to learn mathematics in the language most adapted to their linguistic profile.

Ech muss net an e Mathéscours goen, wou ech d'Mathé vläit beherrschen, mee ech verstinn einfach d'Sprooch net, an där d'Mathé iwwerdroë gëtt. Dat ass fir mech den Haaptpunkt. Dobäi gehéiert awer och, datt ët ee System ass, dee multilingue ass.

Lastly, the fact that 2nd and 3rd languages (L2 and L3) are taught as foreign languages was also mentioned.

OFFER CHARACTERISTICS

The evaluation approach was another characteristic of the EPS offer that was mentioned very positively. The interviewees felt the evaluation approach was focusing on the student, furthering learning, evaluating learning progress, and making learning goals visible to the students.

An der Europaschoul sees du de Kanner net, dir kennt alles, mee du sees hinnen "kuck, dat hues du geléiert, an dat ass den nächsten Schratt, do muss du hin." Also eng vum System hier méi positiv Haltung vis-à-vis vum Schüler, an wou et net drëms geet, en unzeléien oder en unzeschmieren oder ëm eppes virzemaache, wat en net kann, mee wous du sees "hei bass de, an do solls du hin."

The programs as well as the pedagogical approach were also seen as positive, allowing the teachers a certain flexibility and assembling European best practices since they were written by the Member States. The EPS programs were seen as giving the students room for choice, making them take responsibility for their learning, thus furthering motivation.

Moreover, the system structure as such was perceived as very positive, allowing for smooth transitions due to the holistic (primary/secondary education) system;

An dat ass eppes, wat ech mëttlerweil och net méi mësse wéilt, well déi Entwécklung vill mi linear stattfanne kann, wann een de Primaire an de Secondaire am selwechten Haus huet. Do ass den Échange tëscht de Kolleegen, dee méi regelméisseg ass, et sinn awer och di pädagogesch Konzepter, déi op der enger an op der anerer Säit developpéiert ginn, déi vill méi harmoniéis

• • •

kënnen eropgezu ginn, beziehungsweis wou Koncertatioune kënne stattfannen, dass dat, dass deen Iwwergang loosse mer mol soen vun enger P5 op eng S1 net sou dramatesch empfont gëtt, wéi en ab und zu vu verschiddenen Eltren am lëtzebuerger System gelieft gëtt.

as well as relieving orientation pressure due to the *tronc commun* in lower secondary education.

Den europäesche Modell kennt déi Differenzéierung (ESG/ESC) net an d'Kanner an deem een oder anere System orientéiert ginn, respektiv wa se vun ënnen erop wuessen aus dem europäesche Primaire, da komme se an de Secondaire, an déi nächst grouss, oder an der Haaptsaach déi 1. a vläit déi gréissten Décisioun vun Orientéierung, déi se treffe mussen, ass déi um Enn vun der S3. Dat entsprëcht och deem, wat déi meecht Studien erausfonnt hunn, dass een d'Kanner bis zur 9. Klass soll zesummeloossen, dass se bis do och nach ganz vill Ee vun deem Aneren dervundroen (...).*

Other aspects cited were the internationally recognized certification as well as the external evaluations, giving clear criteria to develop the school.

TEACHER DIVERSITY

Another positive aspect that was mentioned in the interviews was the profile of the teachers, who are recruited internationally and bring different perspectives and experiences. Additionally, the schools have a certain freedom in recruiting teacher profiles that fit their school.

Den drëtten Atout, ech denken net vum System, mee vun der Schoul, wéi mir bestinn, ass, an ech soen dat och esou, ass datt mir eis d'Enseignanten kënnen eraussichen. A mir kënnen an dee Pool fësche goën, dee ganz grouss ass. De Pool ass weltwäit. An ech denken, mir kënnen vill iwwert d'Schoulorganisatioun diskutéieren, iwwert Schoulentwécklung, dat, wat ausschlaggebend ass, ass e Programm, an et ass déi Persoun, déi de Programm ënnerriicht. An de Programm ass virginn. Mir gesinn, datt de Programm eng Partie Virdeeler matbréngt. Mir kënnen eis och di Persounen eraussichen, déi de Programm ënnerriichten, mat dem Profil, wéi mir et gären hätten. An dee Profil do kënne mir wierklech kucke goen, wat bréngen déi Leit mat, wat ass hier Approche, a voilà, dat ass och een Atout, net vum System vun der Europaschoul, mee vun der Schoul, wéi mir funktionéieren mat der Méiglechkeet, fir kennen international ze recrutéieren.

• • •

ACCESS

The fact that the EPS offer was open to everyone free of charge was considered a positive aspect as well.

ASPECTS TO BE DEVELOPED

VOCATIONAL OFFER

The headmasters identified the lack of a vocational offer in the EPS system most often as an aspect that should be developed. The EPS programs were described as academic programs, offering no alternatives for students choosing a vocational pathway. These students need to be reoriented into the national vocational track, however for students coming from an English language section for instance, finding an appropriate offer can be difficult.

De Problem, dee sech stellt op den engleschsproochege Klassen, déi mer lo hunn, dat ass, wann déi no der 5e, S3, VP3 oder wéi och ëmmer, fir an d'Formation professionelle, do si keng Débouché'en do op Englesch. Dat ass de grousse Probleem am Moment, an an eisen An huet et elo kee Wert, de Schüler lo 3 Joer op Englesch, soe mer mol, ze ënnerriichten, an da soë mer, sou ok, lo hu mir eist gemaach, kuckt, dass der eens gidd.

DEFINITION OF GUIDELINES

Another aspect perceived in need of development was the definition of certain guidelines, for instance, the definition of *passerelles* between the two systems but also the definition of clearer guidelines on the objectives of EPS and their target population.

An et ass kee Problem, sou laangs du Plaz hues, ass et kee Problem, mee dee Moment, wou d'Plaze knapps ginn, wous du sees, ech muss Kanner refuséieren, well meng Klasse voll sinn, well ech keng Klassesäll méi hunn, well mir net méi Kanner packen, wéi eng hëlls du dann prioritärement eran a wéienge Kanner sees du nee?

BRUSSELS DEPENDENCE

Last, the interviewees considered that the dependence from Brussels was not always ideal, either because certain programs or activities were not adapted or had failed to evolve, or because this dependence was seen as unnecessary in implementing such an offer in Luxembourg.

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NEXT STEPS – FUTURE DEVELOPMENTS AT SYSTEM LEVEL

RAPPROCHEMENT OF SYSTEMS

Concerning future developments of the educational offer in Luxembourg, the headmasters' reflections mainly focused on bringing the two systems closer together, either by integrating positive aspects from the EPS offer into schools following the Luxembourgish curriculum,

An eben den Ëmgang mat de langues véhiculaires a mat de langues d'enseignement, dee fannen ech extrem spannend an ech fannen, datt den nationale System, vu datt mir, wéi gesot déi selwecht DNA deelen, datt mir ganz vill vun deem System léiere kënnen och fir den nationale System.

or even combining the systems into one high quality educational offer from the systems on hand.

(...) ass et net de Rôle och vun der Éducatioun bësse fir ze soë, voilà, dat bidde mir un, well dat gutt ass oder wat muss lénks a riets ajustéiert ginn am nationale System, am Europaschoul- System, fir dat den Schüler sech amfong besser zurecht fënnt.

In this context, the headmasters perceived the development of French literacy acquistion classes as positive. They felt that EPS had paved the way for such developments in the schools following the Luxembourgish curriculum.

Déi Alphabétisation en français, an ech mengen, datt do d'EuropaSchoulen och duerch de Succès, dee se hunn, duerch déi Nofro déi se erliewen, datt do awer elo eng Bereetschaft um Terrain ass, fir iwwert déi Saachen nozedenken, déi mir virun e puer Joer nach net gehat hätten, also ech mengen och, datt d'EuropaSchoulen an deem Sënn de System weiderbrénge kënne, well se eppes weisen wou mir fréier eis net getraut hätten.

The similarity in the language offer between this project and EPS was also mentioned.

Da kënns de rëm bësschen op di international Schoule raus, mat der 1. an der 2. Sprooch. Iergendwéi dréint et sëch – jo, e wier just mi limitéiert de Choix. L1 Franséisch oder L1 Däitsch. A bei eis hues de nach d'Englesch, wat matspille kann – Mee et kënnt bësschen op dat eraus – wéi ee Réduit vum europäesche System.

2.5 WHAT IS THE SOCIETAL DEMAND? PRE-REGISTRATION DATA[11]

We have seen in the interviews that the demand for EPS largely exceeds the number of available places. This imbalance necessarily leads to a selection procedure. Therefore, an investigation of inscription demand may better illustrate societal interest in the policy offer (policy interest vs. policy uptake). Here, we provide a short descriptive analysis, put in context with other data relevant to the question of societal demand for the offer.

2.5.1 DEMAND VS. AVAILABLE PLACES

By May 20th, 2022, the date the data were extracted, **3.031** students had filed a demand for admission in one (or multiple) of the six EPS for the school year 2022/23. Most demands were either for P1 level entrance (864) or S1 level entrance (807) - P1 corresponds to the 1st year of primary education, and S1 to the 1st year of secondary education. This matches the main intake moments perceived by the school headmasters, saying this was when places were available.

Most applications were to the French or English language section (1.529 and 1.324 applications respectively) and 178 to the German section.

At the beginning of the school year 2022/23, **1.529** new students started at an EPS. While this clearly illustrates that demand exceeds the number of places available, simply comparing the number of applications to the number of places is an oversimplification. Some applications may have been refused because the choice of school would not have been in the best interest of the student concerned. Furthermore, this simple comparison does not take into account that some schools, or language sections, are in higher demand than others due to their geographical location, for example. A place at an alternative school with vacancies, however, may not be a viable option for families who do not live close to that school.

To meet the high demand, five additional EPS have opened their doors since EIDE started operating in 2016. This has permitted an increase in the number of students attending EPS by an average of 740 per year, with a record increase of **1.461** from the school year 2021/22 to the school year 2022/23. In the school year 2022/23, there was a total of 4.569 students enrolled in the six EPS, representing 4.6% of students in public and private state-subsidized schools in Luxembourg.

[11] These analyses are currently limited to only one year of data. A longitudinal approach will be more informative in the future.

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2.5.2 NATIONALITY AND LANGUAGE PRIMARILY SPOKEN AT HOME OF APPLICANTS

Looking at the influence of nationality on the frequency of applications, we can see that the majority of applicants for the school year 2022/23 had French nationality, with Luxembourgish a close second.

Table II.2 - Applications to European Public Schools by Nationality and Language Primarily Spoken at Home

Nationality	*N* of applications (%)	Language	*N* of applications (%)
French	579 (19%)	French	973 (32%)
Luxembourgish	505 (17%)	English	481 (16%)
Indian	357 (12%)	Portuguese	351 (12%)
Portuguese	282 (9%)	Luxembourgish	185 (6%)
Belgian	132 (4%)	German	100 (3%)
Italian	130 (4%)	Hindi/Tamil	153 (5%)
British	105 (3%)	Other	788 (26%)
German	80 (3%)		
Other	861 (28%)		

However, in order to estimate how significantly represented one nationality or language group was in the applications, the number of applications was related to their share in the public school student population[12].

These analyses show that, relative to their presence in the general public school population, Indian and French nationals apply more frequently, whereas Luxembourgish and Portuguese nationals apply less frequently than might be expected.

Similarly, Hindi/Tamil, English, and French speakers are more likely to apply to EPS, while Luxembourgish and Portuguese speakers are less likely to apply than might be expected in relation to their share of the public school population.

[12] In the present chapter the term *public school population* refers to all public and state-subsidized schools, whereas private schools that are not state-subsidized are not included.

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Table II.3 - Chi Square Frequency Table Depicting Observed vs. Expected Frequencies in Applications to European Public Schools in Comparison to the Public School Student Population

Language spoken at home	Observed (Expected)	Observed vs. Expected
Hindi/Tamil	153 (10.3)	↑
English	481 (81.3)	↑
French	973 (424)	↑
Other	788 (664.4)	
German	100 (71.4)	
Portuguese	351 (738)	↓
Luxembourgish	185 (1041.5)	↓

2.6 PERCEPTION OF THE PARENTS: ONLINE QUESTIONNAIRE

In order to better understand the reasons for choosing an EPS, we included the perceptions of the parents. Please note that EIGT parents are not included in the present chapter, since at the time of the evaluation, the school was not open yet.

When the survey closed, 888 of 2.451parents had clicked on the link leading to the online survey, with 879 agreeing to participate (effective response rate of 35.9%). The distribution of participation per school was as follows:

Table II.4 - Parent Survey Participation Rates in General and per European Public School

School	*N* of parents in school	*N* of participants (% of total respondents)	Response rate (% of the school)
EIDE	1220	427 (49%)	35.0%
EIMLB	311	142 (16%)	45.7%
LLIS	563	132 (15%)	23.4%
LESC	287	92 (10%)	32.1%
EIMAB	70	24 (3%)	34.3%
No school indicated		62 (7%)	
Total	2451	879	35.9%

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2.6.1 RESPONDENTS AND THEIR CHILDREN

As reported in *Table II.4*, 49% of respondents had a child (or multiple children) enrolled in EIDE. Most respondents (46.1%) indicated they spoke French with their child(ren), followed by English and Luxembourgish (28.1% and 20.5%, respectively), 14% spoke Portuguese[13]. Most respondents reported having completed tertiary education (75.2%)[14]. The respondents were most likely to have one child (66.4%) or two children (27.9%) at the EPS.

61.7% of the respondents indicated to live at least six km away from the school, 38% lived even more than 10 km away. 58% reported using public transport most often, while 40% relied on a private car to get to the school. 20.4% of respondents said they had moved to be closer to the school.

In summary, respondents are typically parents of one child in EIDE, speak French with their child, and are highly educated. More than half live at least six km away and use public transport or their own car to get to school.

47.1% of the concerned children were born in Luxembourg, 17% arrived in Luxembourg more than five years ago, and 35.3% arrived more recently (in the last five years). 53.8% of the children joined the EPS in primary school and 37.4% in secondary school.

At the time of the evaluation, 52.8% of the children were now at secondary school level and 41.9% still at primary school level. 46% of the children are enrolled in the French language section, 35.8% in the English language section, and 17.7% in the German language section.

When asked about their child's language proficiency in the language of the language section, 80.4% of the parents indicated that their child had at least a very good level, 44.9% indicated a native level proficiency.

53.9% of students came to their current EPS from another school in Luxembourg, 71.3% of these, from a public school in Luxembourg (7% from a private school in Luxembourg).

[13] In comparison to the language spoken at home, indicated in the administrative data, in the entire population of the five schools included in the present chapter, in the schoolyear 2021/22, 29.1% spoke French, 13.9% Portuguese, 13.1% English, and 11.2% spoke Luxembourgish at home. This mainly suggests that parents who could not answer in their mother tongue were relatively less likely to complete the questionnaire.
[14] By comparison, in the general population in Luxembourg, 50% of those aged 25-64 and 63% of those aged 25-34 have tertiary education (OECD, 2022).

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In summary, the respondent's child has a good level in the language of the language section, more than a third of them have changed from a Luxembourgish public school to an EPS. Half of the children were born in Luxembourg.

2.6.2 CHANGE OF SCHOOLS AND PARENTAL REASONS OF CHOICE

Most of the respondents said that they found information about the school on the school's homepage (33%[15]), or generally, searching the internet. Equally often, the press and social media were named as the source of their information, closely followed by other parents or acquaintances (29%[6]) and the school's open days. Teachers at the previous school were only indicated by 10%[6] of the respondents.

For those respondents whose children had previously attended another school in Luxembourg, they felt that their children had been mostly:

- happy or moderately happy (73% of the children),
- doing well or very well academically (68% of the children) at the previous school.

For 36% of the children, their parents perceived difficulties at the previous school, mostly related to:

- socio-emotional difficulties either with peers or staff (73%[6] of children whose parents perceived difficulties);
- or language requirements (46%[6]).

For the majority (88%), these difficulties were at least mostly resolved by the change of schools.

When asked about the reasons for their school choice, parents indicated most often the linguistic offer (82%[6]), the gratuity of the offer (65%[6]), the location of the school (60%[6]), the international certification (60%[6]), and the school climate (57%[6]).

When ranking their reasons, linguistic offer came first, international certification second, and academic content in general third, followed by teaching staff and the free of cost offer.

[15] Where percentages are marked with a [6], respondents could give more than one answer, explaining why the sum of the percentages does not equal 100.

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Figure II.4 - Wordcloud of Parental School Choice Reasons

Note. Larger font represents higher response frequency. Generated by worditout.com.

2.6.3 SATISFACTION OF PARENTS

In the current EPS, the respondents perceived their children to be:

- happy or moderately happy (93.4% of the children),
- doing well or very well academically (77.8% of the children).

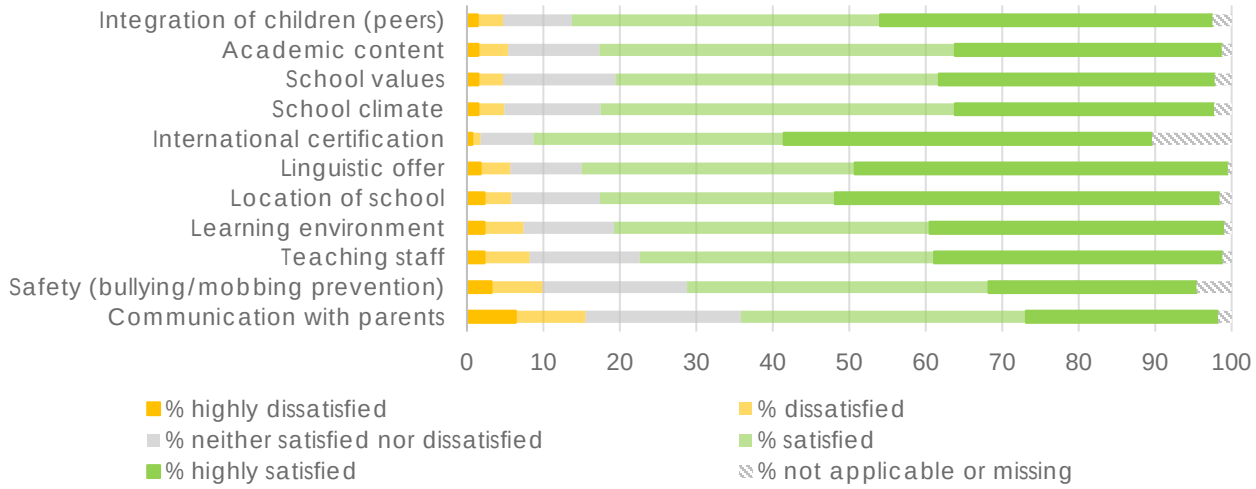
For 22.6% of the children, parents perceive that they experience difficulties at their EPS, mostly related to:

- learning difficulties (86%[6] of the concerned children),
- or socio-emotional difficulties (39%[6]) with their peers (25%) or staff (14%).

When asked about their level of satisfaction, parents were generally very satisfied with most aspects of the school. The highest levels of satisfaction were achieved with the linguistic offer and the integration of their children with their peers (85% and 84%, respectively, said they were satisfied or very satisfied). Other aspects that reached 80% satisfaction ratings were: location of the school, international certification, learning environment, academic content in general, and school

climate. Teaching staff and school values received over 75% satisfaction ratings. Elements of dissatisfaction were: communication with parents (15% dissatisfied) and safety (anti-bullying/mobbing, sensibility measures; 10%), although over 60% of the respondents were also satisfied with these factors.

Figure II.5 - Satisfaction Levels of Parents Concerning Different School-related Aspects



Note. For each dimension, there is a small number of respondents that chose not to answer. These are shown here under *% not applicable or missing*.

2.6.4 FREE EXPRESSION

358 of the parents took the opportunity to leave an additional comment at the end of the survey. Analysis (frequency and relevance) of these comments generally confirm the above findings.

Overall, parents perceived the schools to be good schools. Parents also felt that the schools fit the diversity of the population and appreciated the multiculturalism.

Le concept des écoles internationales publiques répond parfaitement aux spécificités du pays et à la grande hétérogénéité des profils migratoires et des langues parlées que l'on y trouve. Ces écoles constituent un vecteur d'égalité des enfants face au défi de l'intégration, pour tous. Le développement de ce type d'écoles est à encourager.

The comments showed that Luxembourgish/German-speaking families also appreciated the offer of EPS, to avoid the increasing importance of French in secondary schools following the Luxembourgish curriculum, including the language switch in mathematics.

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The reason why I chose the international system for my son was based the fact that here maths isn't taught in French. The Luxembourgish system „classic" is very difficult for German/ Luxembourgish-speaking children, not only because maths are taught in French but also because later - history...etc are taught in French. The international system does justice to the child's language skills.

On the other hand, parents expressed a perceived lack of Luxembourgish language teaching, which mostly reflected a desire for better integration of their children.

L'apprentissage du luxembourgeois est difficile quand l'enfant est élève international depuis le primaire et ne parle pas la langue à la maison. (...) Le fait de ne pas parler le luxembourgeois correctement est un frein à l'intégration de mes enfants dans le pays.

A number of comments again highlighted the need for better and more frequent communication between the school and the parents.

Was ich bemängeln würde, ist die Kommunikation mit den Eltern, die meiner Meinung nach unzureichend ist. Es sollte ebenso wie in traditionellen luxemburgischen Schulen mehr Wert darauf gelegt werden trimestrielle Elterngespräche zu haben.

Comments on the quality of teaching, academic support, and professionalism of teachers were more mixed. The perceptions varied between negative and positive comments on the quality of teaching and teacher absenteeism. In the satisfaction ratings, 76% of the respondents stated that they were satisfied with the teaching staff (see *Figure II.5*).

In addition, some parents expressed a wish for vocational options.

Yes, we need more vocational options for English speaking children. A levels and IB and European bac are very academic and not suitable for everyone.

Difficulties in accessing the schools due to a lack of transport and/or parking options, and a lack of security were also mentioned several times.

Offre de transport en commun (...) adaptée à l'élève en secondaire; pas à l'élève en primaire, obligeant de venir en voiture.

In a related question, 70.5% of respondents said they were satisfied with access/transport to school, while 28% were not. Where this was not the case, the most common reasons given were a lack of transport altogether, transport that takes too long, transport that is unsupervised and, in some cases, transport that is too expensive. However, the use of private cars was also seen as problematic, with respondents reporting a lack of parking spaces and safety issues caused by cars for children walking or cycling.

2.7 GENERAL DISCUSSION AND CONCLUSION

The present study used a mixed-methods approach, to obtain exploratory feedback from relevant stakeholders, both those who implement the EPS offer and those who choose it. Several important findings emerged from these different sources.

Firstly, regarding the linguistic offer, EPS offers a multilingual education program with the added flexibility of choosing:

- the main language of instruction (and therefore also the language of literacy acquisition, L1),
- three additional languages (which must include Luxembourgish), taught as foreign languages.

In this way, the multilingualism inherent to Luxembourg is maintained, but with the added flexibility of being able to adapt education to the linguistic profile of the learner. For parents, the language offer is the main reason for choosing an EPS. In addition, the system operates a language switch in secondary school in content subjects, similar to the Luxembourgish curriculum. However, unlike the Luxembourgish curriculum, the EPS system does not switch in mathematics (or science in general).

This flexible multilingualism, as described above, is viewed positively by both parents and school management and is seen as well suited to the demographics of the national population.

In this context, it is also felt that EPS contribute to the integration of their students into the local community by focusing on the national languages, including Luxembourgish, as well as English. Consequently, both stakeholder groups see the added value of EPS for integration. Headmasters see the EPS offer as complementary to schools following the Luxembourgish curriculum and see several similarities between the two, such as the inherent multilingualism.

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However, the language-related aspects are not the only positive features identified of the EPS. The evaluation approach, which focuses on learning progress, as well as the pedagogical approach in general, were seen as very positive by the headmasters. Other positive aspects were structural, such as the continuity of the offer with a system integrating primary and secondary education, as well the existence of a *tronc commun* up to S3 (± 15-year-olds).

On the other hand, stakeholders have also identified potential aspects to be developed. The main points are:

- A better quality of Luxembourgish language teaching for better integration.
- A broader vocational offer in English for learners who want to follow a vocational rather than an academic track.
- Better information and guidance for students on the public education offer in Luxembourg.

Some of these have already been identified at ministerial level and working groups have been set up. For example, a specific Luxembourgish program has been developed for EPS, with the *Institut National des Langues* certifying the language level at S3. In addition, working groups are currently focusing on the development of a vocational offer in English, and the definition of *passerelles* from one system to the other.

The information/orientation of students in the public education system is another very important point raised in the interviews. In order to ensure that all students find their best fit in the increasingly complex public education offer, a major effort must be made by a very knowledgeable teaching force. However, it was felt that there exits misconceptions about EPS among the general population, including teachers in schools following the Luxembourgish curriculum. Relatedly, only about 10% of parents said that they had been oriented to an EPS by a previous teacher, with most using internet searches or recommendations from acquaintances to find information for making a school choice.

The pre-registration data show that Portuguese and Luxembourgish speakers were relatively less likely to apply to EPS. While this might be expected for Luxembourgish speakers, as the Luxembourgish curriculum corresponds to their linguistic needs, the lower share of Portuguese speakers applying may be surprising, as as a group they typically do not always fare well in schools following the Luxembourgish curriculum (Hornung et al., 2021).

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Access to EPS is free and universal. However, in order to ensure equitable access to EPS, efforts must be made to reach the children who would most benefit from the alternative language offer. This targeted effort could help to counteract potential social inequality effects related to school choice (Jheng et al., 2022). Furthermore, access is not only about knowing about the offer, but also about physical access in terms of transport to such a school, especially for younger children in primary school.

Possible solutions are seen by the management teams of the schools in the development of Luxembourg's education system, either by integrating the best aspects of both offers into one single education offer, or by integrating at least parts of the EPS offer into schools following the Luxembourgish curriculum. In this context, the pilot project of offering French literacy acquistion classes in some schools following the Luxembourgish curriculum is viewed positively by the management teams of EPS, who also mention that the opening and success in terms of societal demand has allowed a discussion about alternatives in the language policy of Luxembourg's public education system (see also *Kaarten Op Den Dësch*, 2022).

In conclusion, when reflecting on the public policy of EPS, it is important to emphasize that societal demand is high and that one of the user groups of the offer, the parents, are largely satisfied with the schools. Moreover, more than 90% of the learners of EPS are perceived by their parents as at least mostly happy in their school.

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REFERENCES

Biddle, N. (2017). *Mixed methods for policy evaluation*. SAGE Publications, Ltd.

Golden, G. (2020). *Education policy evaluation: Surveying the OECD landscape*. OECD. https://doi.org/10.1787/9f127490-en

Goldring, E. B., & Phillips, K. J. R. (2008). Parent preferences and parent choices: The public–private decision about school choice. *Journal of Education Policy, 23(3)*, 209–230. https://doi.org/10.1080/02680930801987844

Hadjar, A., & Backes, S. (2021). Bildungsungleichheiten am Übergang in die Sekundarschule in Luxemburg. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 86–93). Luxembourg, LUCET & MENJE.

Holmes Erickson, H. (2017). How do parents choose schools, and what schools do they choose? A literature review of private school choice programs in the United States. *Journal of School Choice, 11(4)*, 491–506. https://doi.org/10.1080/15582159.2017.1395618

Hornung, C., Wollschläger, R., Keller, U., Esch, P., Muller, C., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 1. und 3. Klasse: Negativer Trend in der Kompetenzentwicklung und kein Erfolg bei Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 44–55). Luxembourg, LUCET & MENJE.

Jheng, Y., Lin, C., Chang, J. C., & Liao, Y. (2022). Who is able to choose? A meta-analysis and systematic review of the effects of family socioeconomic status on school choice. *International Journal of Educational Research*, 112, 101943. https://doi.org/10.1016/j.ijer.2022.101943

Kaarten op den Dësch: Wat muss an der Schoul änneren? (2022, December 18). 100komma7. https://www.100komma7.lu/article/aktualiteit/kaarten-op-den-dech-wat-muss-an-der-schoul-anneren

Mayring, P. (1991). Qualitative Inhaltsanalyse. In U.Flick, E. v. Kardoff, H. Keupp, L. v. Rosenstiel, & S. Wolff (Eds), *Handbuch qualitative Forschung: Grundlagen, Konzepte, Methoden und Anwendungen.* (pp. 209-213). Beltz - Psychologie Verl. Union.

OECD. (2022). *Education at a Glance 2022*. https://www.oecd-ilibrary.org/content/publication/3197152b-en

ONQS. (2020). *Le bilan de l'évaluation systémique de l'éducation au Luxembourg*. ONQS. https://orbilu.uni.lu/handle/10993/44427

Scheerens, J., Glas, C. A. W., Thomas, S. M., & Thomas, D. S. (2003). *Educational evaluation, assessment, and monitoring: A systemic approach*. Taylor & Francis.

CHAPTER III: EDUCATIONAL TRAJECTORIES IN LUXEMBOURG'S EUROPEAN PUBLIC SCHOOLS

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3. EDUCATIONAL TRAJECTORIES IN LUXEMBOURG'S EUROPEAN PUBLIC SCHOOLS

SUMMARY

- For students who remain in the same curriculum during a given time period, delayed careers *(allongement de cycle, retard scolaire)* are less frequent in the European curriculum compared to the Luxembourgish curriculum.
- The vast majority of students who attended P5 in European Public Schools (EPS) move also towards secondary education within EPS (instead of moving towards another curriculum).
- The student population of the first grade in secondary education (S1) in EPS is partially composed of primary school EPS students (P5). However, the largest share of students in S1 originates from schools following the Luxembourgish curriculum, where they attended C4.2 (the last primary school grade). These students are thus one year older.
- The majority of the students who complete their observation cycle in EPS (S3) tend to continue their education in EPS afterwards (S4).
- Comparisons between language groups within EPS revealed that the rate of continuous trajectories in lower secondary school grades varies slightly across groups. Accordingly, students who speak primarily Luxembourgish and/or German at home show a slightly higher continuity rate than their French speaking peers, who in turn show slightly higher continuity rates than their English or Portuguese speaking peers.
- Preliminary results indicate that there seems to be greater continuity (less class repetitions, less track changes) across educational trajectoires in EPS than in the Luxembourgish curriculum. However, more data and longer observation periods are needed to report robust and longitudinal results.

Students' academic achievement is often analysed by looking at their performance (*Chapter IV*) and their educational trajectories (*Chapter III*). For the latter, factors such as class repetition, class acceleration, drop-out rates, curriculum or school track changes are taken into account. Changing of school or school tracks is often accompanied by a new composition of peers and can represent a central (critical) event or a challenge to adapt to new learning methods, new levels of demands, and exploring one's own role within the new class (Koch, 2006).

The education system following the Luxembourgish curriculum has a decision-intensive structure, as there are two institutionalised orientation phases (one at the end of primary school and the other one after grade 9 in ESG) in schools following the Luxembourgish curriculum. These

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orientation-related decisions are of considerable importance for the students' further learning, well-being in school, and life chances (Martin et al., 2011; Hadjar, 2019). Even if achievement is taken into account, educational decisions are made social-selectively - for example, students that are high achieving but have a low socioeconomic status (SES) are significantly less likely to go to the *Enseignement secondaire classique* (ESC, academic track) than high achieving students with a high SES (Hadjar & Backes, 2021). These issues are closely associated with educational inequality. Therefore, it is interesting for this report to look at the extent to which students in EPS might differ in the educational trajectories they experience, especially since they are in a common track until S3.[16]

It is important to note that EPS only exist since 2016 (see *Chapter I*), and therefore, there is not enough data yet to conduct longitudinal analyses covering the entire educational trajectories of EPS students compared to schools following the Luxembourgish curriculum, simply because no student has yet to complete his or her entire career in EPS. However, it is possible to give insights into particular educational phases of EPS students. In future reports, the focus will be shifted to entire educational trajectories.

3.1 OBJECTIVES AND DATA USED

The objectives addressed in the present chapter are the following:

1) Comparison of educational trajectories (delayed school careers and track changes) of students (during the first two years) in European curriculum and Luxembourgish curriculum (see *3.3* on delayed school careers and *3.4* on track changes)
2) Detailed analyses of EPS students' transitions at particular branching points (e.g., from primary to secondary school and after S3, see *3.5*)

To accomplish these objectives, longitudinal pseudonymized administrative data (Scolaria; *fichier élèves*) on students' attendance in different grades *(cycle* or *année d'études)*, curricula (Luxembourgish, European, Other International), and tracks *(ordre d'enseignement)* were used. Additionally, the background variable language primarily spoken at home, gathered via students/parents, is also available in the administrative data. As can be seen in *Table III.1* showing the number of EPS students per grade level and school year, most students are currently enrolled

[16] EPS are characterized by a common core approach in lower secondary education, which means that they have only one school track. However, there are exceptions in Luxembourg, as some schools also offer the *Voie de préparation* (VP, see *Chapter I*) as an additional school track.

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in P1 and S1 and no students are attending S7 yet, as the schools gradually extend their offer. With the rising number of EPS since 2016, the total number of students has increased up to the school year 2021/22. Overall student numbers are still low, which leads to statistical limitations.

Table III.1 - Number of EPS Students per Grade Level from the School Year 2016/17 to 2021/22

Grade/school year	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
P1	35	63	147	204	225	258
P2	6	60	90	182	231	249
P3	6	39	96	123	208	248
P4	8	23	52	117	147	227
P5	2	42	54	89	167	165
S1	78	130	312	339	450	529
S2	0	79	126	317	364	464
S3	0	0	86	159	341	399
S4	0	0	0	75	143	315
S5	0	0	0	0	69	131
S6	0	0	0	0	0	71
S7	0	0	0	0	0	0

3.2 GRADE LEVEL AND TRACKING STRUCTURES IN EPS VERSUS LUXEMBOURGISH CURRICULUM

To gain a better understanding of the various types of educational trajectories in EPS and in schools following the Luxembourgish curriculum, a detailed look at the grade level and tracking structure of the two systems is presented in the following.

Comparison of grade level structure

Primary education following the **Luxembourgish curriculum** is divided into four cycles, each lasts two years. C1 consists of preschool education. C2, C3, and C4 cover six years. Grade 1 of primary education, for example, is labeled as C2.1, grade 2 as C2.2 (see *Figure III.1*). Secondary education starts in grade 7. Lower secondary education covers the grades 7, 8, and 9. Upper secondary ecudation starts in grade 10 and lasts – depending on the track – until grade 11 or 13.[17]

As aforementioned in *Chapter I*, *Table I.3* (Organisation of Studies in European Schools), primary education in **EPS** covers the first five years of education (P1-P5), while secondary education is

[17] Few occupational sections last until grade 14.

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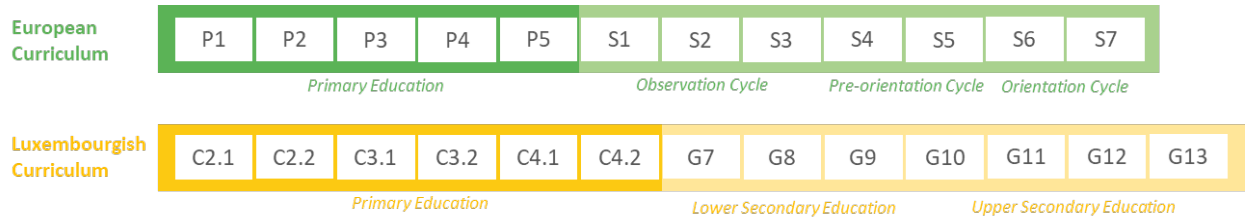
organized in three cycles (i.e., observation, pre-orientation, and orientation cycle) covering seven years of education (S1-S7). Therefore, the grade level structure of the two systems is not parallel. For example, S1 in EPS is the first grade in secondary education and corresponds in terms of age to grade 6 in the Luxembourg curriculum (labeled as C4.2), which is still part of primary education (see *Figure III.1*), and secondary education in the Luxembourg curriculum starts with grade 7 (labeled as G7).

Figure III.1 - Primary and Secondary Education Following the European (Green) and the Luxembourgish Curriculum (Yellow)



Comparison of tracking structure

As already mentioned, with institutionalized orientation procedures at two points in time (after C4.2 and after grade 9), the education system following the **Luxembourgish curriculum** is rather decision-intensive (see also *Chapter II*). Secondary education is divided into parallel school tracks with different achievement levels and leading to different school leaving certificates. Thus, from grade 7 onwards the secondary program of the Luxembourgish curriculum is divided into the tracks *Enseignement secondaire classique* (ESC), *Enseignement secondaire général* (ESG), and *Voie de préparation* (ESG-VP), which is part of ESG.[18] A change between these tracks is defined as a "*track change"* in the following. The structure of the newly established **EPS** envisions greater continuity in the educational trajectory, as there is no orientation phase after primary school, but rather a direct transition to secondary education in the same school institution, as well as no achievement-differentiated tracks at lower secondary level. Thus, lower secondary education in EPS follows a common core approach *(tronc commun)* leading to the European Baccalaureate. Few EPS in Luxembourg additionally offer a modified form of the *Voie de préparation* (EPS-VP, see *Chapter I*). Changes between these two tracks within the European curriculum are defined as "*track change"*. Changes between different curricula (Luxembourgish curriculum, European curriculum, or other international curricula, see *Chapter I*) are understood as "*curriculum change"* (see analyses in *3.4*).

[18] From grade 10 onwards, the ESG provides different tracks in upper secondary education leading to different school leaving certificates.

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Both curricula have in common that they offer achievement-based courses starting in different grades in certain subjects at basic and advanced levels, for example. These achievement-based courses are not defined as school tracks in this context.

Regarding the different orientation procedures in the two curricula, some considerations about their consequences for the students remain noteworthy. In EPS, due to the continuous education at primary and secondary school level within the same school, there is no disruption after primary education, which implies no separation from peers, no new school route etc. (Koch, 2006). However, EPS students potentially experience a disconnect with their neighborhood peers by enrollment in EPS in P1, due to the fact that they have, on average, longer travel distances to their EPS than students going to a primary school following the Luxembourgish curriculum that is located closer to their homes (see catchment area and travel distances in *Chapter I*). Indeed, these students have shorter travel distances and can more easily maintain contacts with their peers in the neighborhood during primary education. They experience a disruption when it comes to the transition to secondary schools, which are located in larger cities making longer travel distances necessary.

3.3 DELAYED CAREERS WITHIN AND ACROSS CURRICULA

In a 2008 study on differentiation measures (such as class repetition and tracking), Luxembourg was described as a country of grade repetition ("*Pays du redoublement*"; Reichert, 2008). More than 10 years later, still a high proportion of students who are older than their theoretical age in the respective grade are reported (MENJE, 2022). This seems surprising given the well established ineffectiveness of grade repetition (e.g., Hornung et al., 2021; Sonnleitner et al., 2021). Indeed, stratified education systems, to which the school system following the Luxembourgish curriculum belongs, are prone to selection strategies creating homogeneous groups of students in terms of performance, and thus show higher degrees of educational inequalities (Van de Werfhorst & Mijs, 2010; Pfeffer, 2008) and can have higher rates of class repetition due to the homogenization logic (MENFP & EMACS, 2007).

Figure III.2 shows the proportion and numbers of primary school students with delayed careers in schools following the European curriculum (top) versus schools following the Luxembourgish curriculum (bottom).

The analysis contains all students who were registered in the school year 2021/22, who started their school career in grade 1 (C2.1 resp. P1) and remained in the same curriculum since they began.

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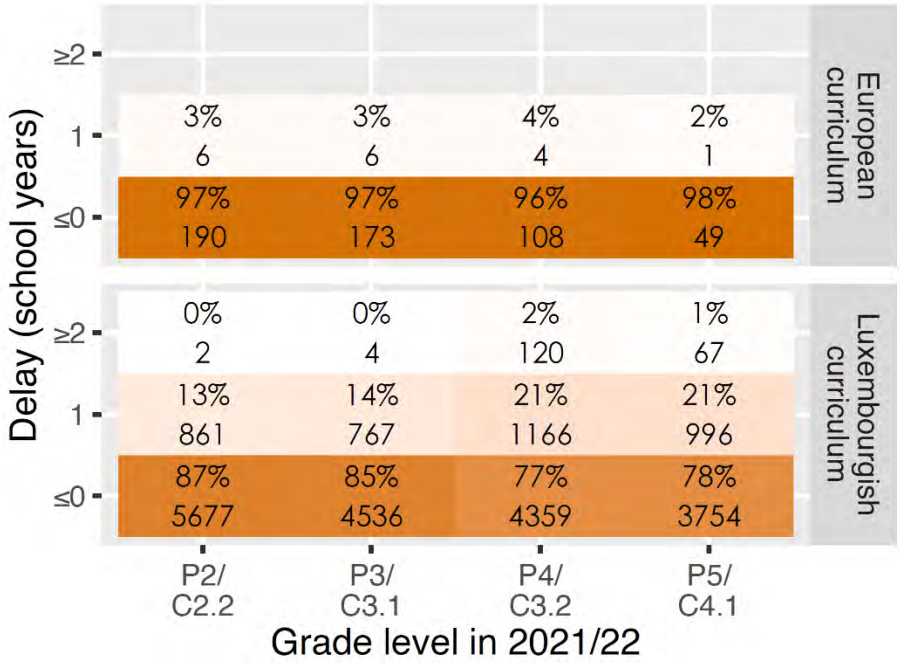
A delay in 2021/22 was then calculated from the year the student first started grade 1. *Figure III.2* shows that 13% of students following the Luxembourgish curriculum in C2.2 had a dealy, while 3% of EPS students in P2 had a delay[19]. The lower rate of delay in EPS can also be observed in later stages of primary education. In P5, only 2% of the EPS students showed a delay, while 22% of students following the Luxembourgish curriculum showed a delay of at least one year in C4.1.

Figure III.2 - Number of School Years Delay among Primary School Students by Curriculum (European Curriculum vs. Luxembourgish Curriculum) for the School Year 2021/22



Note. The percentages are displayed as column percentages per curriculum. The color shading represents the values of the percentages. The darker the shade of orange, the higher the student share for the relevant number of delayed school years per grade level.

Figure III.3 shows the delay of secondary school students who were enrolled in the school year 2021/22 and remained in the same curriculum since their start in secondary school S1 in EPS, and grade 7 (see *Figure III.1*, G7) in the Luxembourgish curriculum. Thus, the percentages given concern only the delays experienced within secondary school. As former reports have shown that school delay (MENJE, 2021a,b), respectively class repetition (Hadjar et al., 2018), varies between school tracks in the Luxembourgish curriculum, *Figure III.3*, representing school delay for secondary

[19] Example: When a student was in P1 in the school year 2018/19, it is expected for the student to be in P3 in the school year 2021/22. If the student is in fact in P2 in the school year 2021/22, there is a delay of one year.

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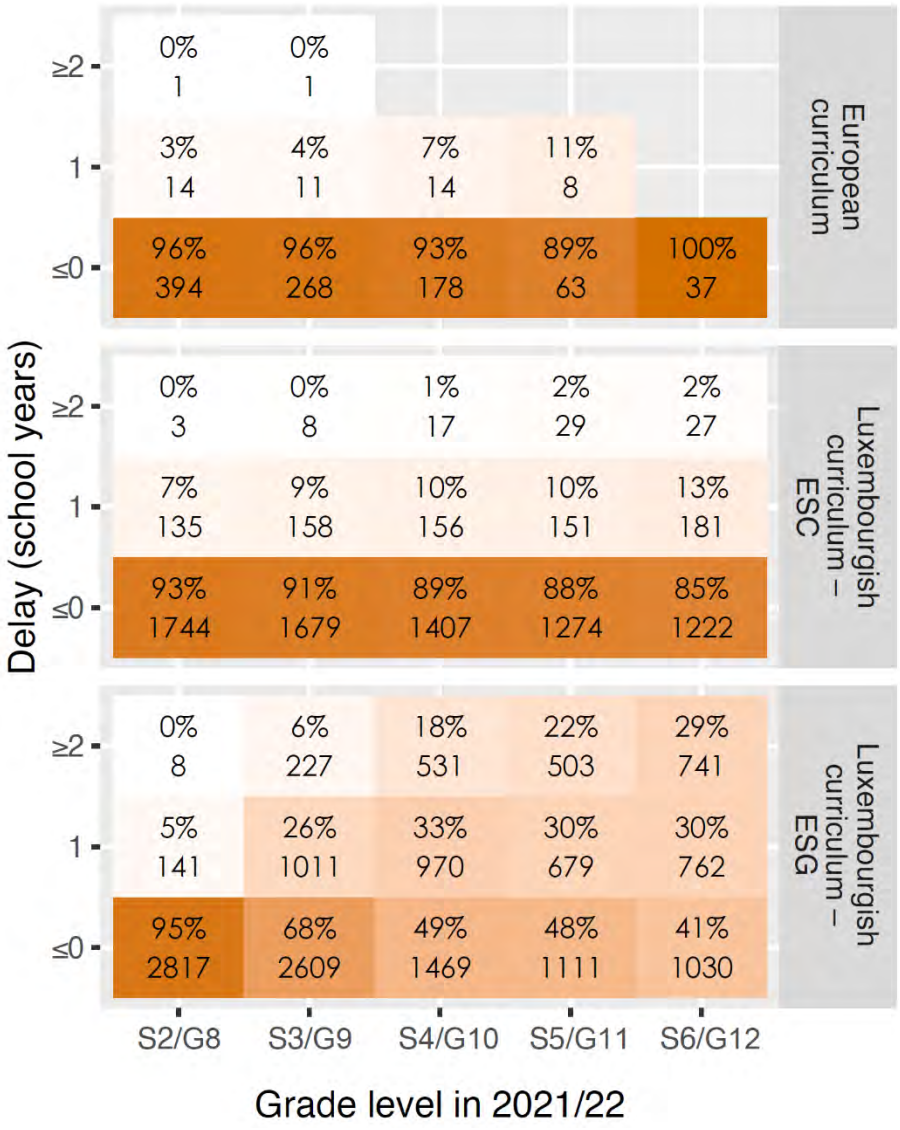
education, will be split by school track, depicting ESC in the middle section, ESG at the bottom and – for the intended comparison – the European curriculum at the top.

Figure III.3 - Number of School Years Delay among Secondary School Students by Curriculum (European Curriculum vs. Luxembourgish Curriculum) for the School Year 2021/22



Note. The percentages are displayed as column percentages per curriculum. The color shading represents the values of the percentages. The darker the shade of orange, the higher the student share for the relevant number of delayed school years per grade level.

When comparing the two curricula, the darker shading of the bottom line in the European curriculum (with percentages between 89% and 100%) illustrates that EPS students at secondary school level experience more often trajectories without delay than secondary school students in the Luxembourgish curriculum (with percentages between 85% and 93% in ESC and percentages

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between 41% and 95% in ESG). For example, in ESC in the Luxembourgish curriculum, 89% of students were without delays in grade 10 (G10). 10% of students already had one year of delay since their start in secondary school, and 1% had two or more years of delay (not taking into account previous delays from primary education). In ESG in the Luxembourgish curriculum, 49% of students were without delays in grade 10 (G10). 33% of students already had one year of delay since their start in secondary school, and 18% had two or more years of delay (not taking into account previous delays from primary education). In contrast, in S4 in EPS, only 7% had a delay of one year. There was no delay of two or more years at all (again without taking into account previous delays from primary education), although of course the small numbers of EPS students must be taken into account. In sum, it can be seen that delays occur more frequently in secondary education (see *Figure III.3*) than in primary education (see *Figure III.2*), both in EPS and in the Luxembourgish curriculum.

It is important to note that these data should not be understood as conventional class repetition rates as only those students who had been enrolled in the same curriculum since the first grade of primary school (*Figure III.2*) or the first grade of secondary school (*Figure III.3*) were included in the sample to make a valid comparison. Students who, for example, first repeated a grade level and then changed curriculum (or vice versa), or students who first repeated a grade and then left the school system completely, were excluded.

What can be concluded is that for students who remain in the same curriculum during the period under consideration, class repetition is less frequent in EPS.

3.4 TRACK CHANGES WITHIN AND ACROSS CURRICULA

As other stratified education systems such as the education systems of Switzerland, Germany, or Austria, the education system following the Luxembourgish curriculum is rather decision-intensive, with institutionalized orientation procedures at two points in time and a separation of primary and secondary education provided in different school buildings (see *3.2*). This results in a disruption in the students' trajectories, since the transition from primary to secondary school as well as the transition from lower to upper secondary school after grade 9 in ESG implies a new learning environment as well as a new peer composition. This is perceived very differently by those affected, and often seen as a challenge according to previous studies (e.g., Backes, 2018). Moreover, the decision phases can translate into a "*search for the right track*" (Backes, 2018) and for some students early re-orientations – as a form of correction of a former decision – occur (for Germany: Stubbe 2009; Kramer et al. 2009; Koch, 2003; for Luxembourg: Backes, 2018).

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Table III.2 focuses on the potential re-orientations in form of track changes[20] after the first grade in secondary education for students in the EPS (EC, top) in comparison to students in the Luxembourgish curriculum (LC, bottom) for the school year 2020/21. It has to be noted that, in general, EPS do not offer different tracks due to its common core approach. However, few EPS provide the VP in addition to the track leading to European Baccalaureate (see *Chapter I*), these track changes are taken into account here. It can be seen that the percentage of those remaining on schedule in the track they attended in the first secondary school year is 96.2% in EPS and slightly lower at 94.0% in the Luxembourgish curriculum. Thus, in EPS, early re-orientations occur in only 3.8% of the students. 0.5% (*N* = 2) of the students re-orient to another track within the European curriculum, and 3.3% (*N* = 14) of the students change to another curriculum (either to the Luxembourgish curriculum or an international curriculum). In the Luxembourgish curriculum, 6% re-orient early, with 5.2% (*N* = 258) changing within tracks of the Luxembourgish curriculum and 0.8% (*N* = 41) changing curriculum.

Table III.2 - Track Changes among Secondary School Students in the European Curriculum and Luxembourgish Curriculum (School Year 2020/21)

2020/21		S1 to S2	%	N
Track changes	**European Curriculum (EC)**	remained in EC (same track)	96.2%	411
	(*N* = 427)	remained in EC (different track)	0.5%	2
		changed curriculum	3.3%	14
		Grade 7 to Grade 8	**%**	***N***
	Luxembourgish Curriculum (LC)	remained in LC (same track)	94.0%	4701
	(*N* = 5000)	remained in LC (different track)	5.2%	258
		changed curriculum	0.8%	41

3.5 EUROPEAN PUBLIC SCHOOL STUDENTS' TRANSITIONS AT PARTICULAR BRANCHING POINTS

To provide a better understanding of the various types of track changes and curriculum changes that have been identified in *3.4*, a detailed look at students' transitions in the European curriculum is presented in the following. In order to illustrate these transitions, Sankey diagrams (similar to flow charts) were created for different student cohorts (see *3.5.1* to *3.5.5*).

According to Boudon "any school system, whatever its apparent flexibility, forces the individual, at x times in his schooling" (1974, p. 108), at so-called "*branching points*", to decide whether to

[20] Definitions of track changes and curriculum changes are to be found in *3.2*.

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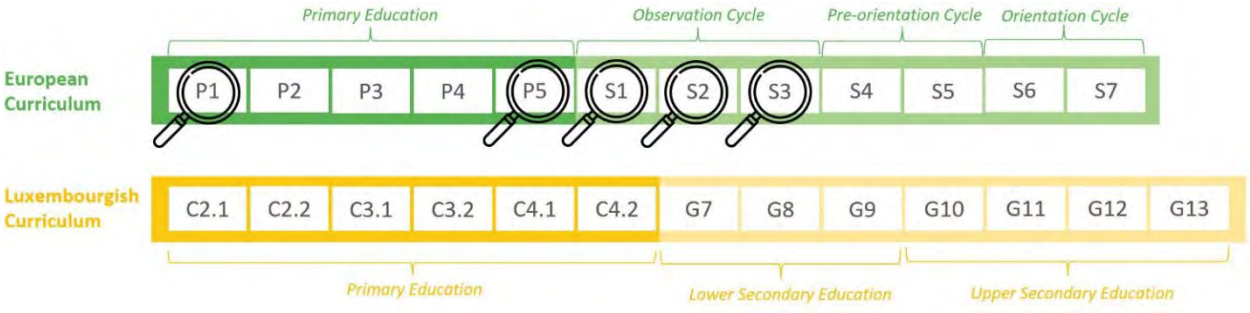
remain in the current track or to change the students' educational situation (by changing track, dropping out etc.). Here, we follow Boudons' rather broad understanding of branching points and mean points in time after particular grade levels in the European curriculum that may show variations in students' transitions due to the systemic grade level structure that has been described above (see *3.2*). The selection of branching points for the detailed analyses of EPS students' transitions (see *Figure III.4*) is based on the following argumentation.

As aforementioned in *3.2*, primary education in EPS covers the first five years of education (P1-P5), while secondary education covers seven years of education (S1-S7). In terms of grade level, P1 and S1 were chosen because they mark the beginning years of primary and secondary school education, respectively. Accordingly, the Sankey diagrams were used to analyse the continuity of the future trajectories of students in P1 and S1, and to answer the question whether the students remain in the chosen curriculum and advance to the next grade level, or show different transitions.

Figure III.4 - Selection of Branching Points for the Analyses of Transitions



Moreover, P5 and S3 were chosen as these branching points represent the last year of primary education, respectively the last year of the observation cycle in secondary education. Even though the European curriculum defines itself as a common core system, the purpose of these analyses is to examine whether a certain share of students may re-orient towards other school offers at these branching points. Thus, Sankey diagrams were created to trace the transition of P5 graders to secondary school and the transition of S3 graders' to upper secondary school.

Furthermore, Sankey diagrams were used to analyse the educational origins of S1 students at the beginning of secondary education in order to answer the question of what school curriculum the students have previously attended. This is particularly relevant because EPS were recently established so that the secondary school classes cannot be composed purely of former EPS primary school students. Given the fact that S1 corresponds to C4.2 and S2 corresponds to Grade

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7 in the Luxembourgish curriculum (see *Figure III.4*), curricula changes could be possible at this particular branching point. Thus, the educational origin of S2 students will also be analysed.

The following questions are examined by making use of Sankey diagrams:

- How continuous are EPS students' primary school trajectories (P1 to P4, see *3.5.1*)?
- What happens to EPS students before and after finishing primary schooling (P5, see 3.5.2)?
- What is the composition of students that begin secondary education in EPS (S1)? Where do they come from? What do subsequent trajectories of S1 students look like (see 3.5.3)?
- How many cross-entry students move directly to grade S2 in EPS after primary education following the Luxembourgish curriculum (see 3.5.4)?
- How continuous are the trajectories of EPS students after finishing the observation cycle (S3, see *3.5.5*)?

Sankey diagrams represent a group of students at a given time and depict their educational trajectories. More information about these diagrams and a *Sankey reading help* is provided in *3.5.1*. The questions above will be explored with Sankey diagrams which are based on the most recent available administrative student data for each of the respective analyses (see *Table III.1*).

3.5.1 HOW CONTINUOUS ARE EPS STUDENTS' PRIMARY SCHOOL TRAJECTORIES (P1 TO P4)?

With regard to student trajectories, this section focuses on the beginning of primary education and examines students' educational trajectories (P1 and onwards). In order to determine the continuity of EPS students' primary school trajectories, and thus, to analyse how many students remain in EPS and advance to the next grade level, continuity rates have been calculated by using the data from the school year 2018/19, as it provided the most comprehensive data with regard to the total number of students. In addition to the continuity rates from one school year to the consecutive school year, so called survival rates (Boudon, 1974) have been calculated. The survival rate is calculated as a product of the continuity rates in between a starting year to a chosen end year of a given cohort without class repetition (here from P1 to P4 for the students attending P1 in the school year 2018/19). This rate gives the opportunity to summarise continuity over a chosen number of years and thus enables comparisons between groups.

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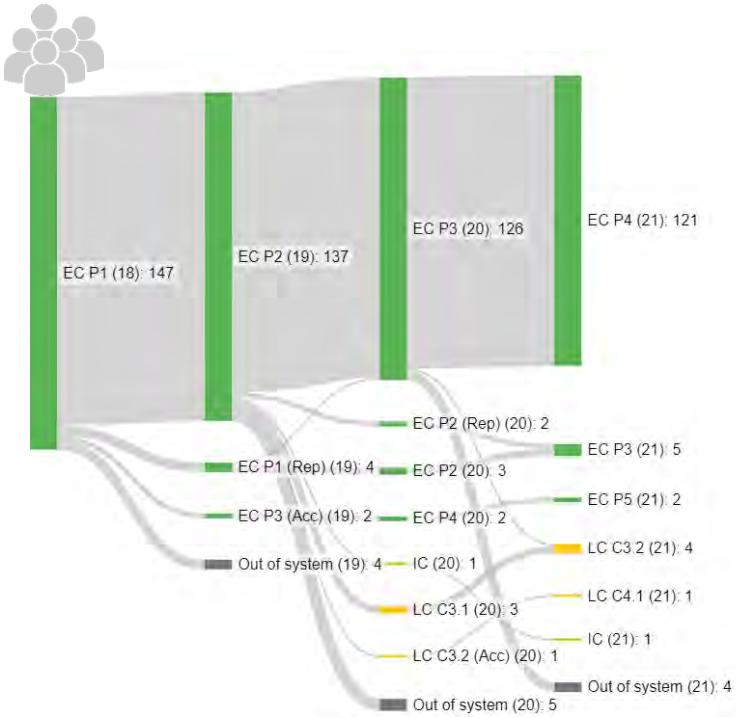
Reading help for Sankey diagrams

The following figures are so-called Sankey diagrams (flow charts), which were created by using SankeyMATIC. They show how many students make which transitions from one school year to the next. Each Sankey considers students of a certain EPS grade level as the initial cohort. This is indicated by the group symbol. The vertical bars show the distribution of students in different curricula. The river arms at the left hand side of the vertical bars show where the same students were a year earlier, and those at the right hand side show where the students were a year later. Thus, the width of the river arms represents the relative number of students making a particular transition.

For convenience, abbreviations were used in order to represent different curricula and grade levels. EC stands for European curriculum, LC stands for Luxembourgish curriculum, and IC stands for other International curricula (e.g. Cambridge). Rep stands for repetition and Acc stands for acceleration. Lastly, the number in brackets represents the school year. For example: "EC P2 (19)" *represents the grade P2 students who are in the European curriculum in the school year 2019/20.*

Figure III.5 - Primary School Trajectories of Grade P1 EPS Students (2018/19 Cohort, *N* = 147)



Note. This Sankey diagram considers students who were registered in P1 in the school year 2018/19 as the initial cohort (*N* = 147). This is indicated by the group symbol. The diagram is most easily read from this starting cohort. EC = European curriculum. LC = Luxembourgish curriculum. IC = other International curricula (e.g. Cambridge),. Rep = repetition,. Acc = acceleration. The number in brackets represents the school year.

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Accordingly, *Figure III.5* shows that in the school year 2018/19, 147 students were registered in P1 of EPS implementing the European curriculum (EC). As it can be seen in the dark green vertical bars, most students remain in the EPS in the following years and proceed to the next grade. At the end of the school year 2018/19, 137 of 147 EPS students (93.2%) move from P1 to P2. In the consecutive years, it becomes 125 students (91.2%) moving from P2 to P3, and 121 (96.0%) students moving from P3 to P4. The survival rate results is 81.6% from P1 to P4 (.932 x .912 x .96). Thus, 81.6% of the students starting in P1 in EPS in the school year 2018/19 make it to P4 in the school year 2021/22 without a delay (see *Figure III.5*).

Although small in number, there are also students who follow other transitions: students who advanced two years at once (e.g., 2 students moved from P1 to P3 upon completion of the school year 2018/19), students who repeated a grade in EPS (e.g., 2 students were again enrolled in P2 upon completion of the school year 2019/20), students who changed curricula and enrolled in schools implementing International curricula (here: Cambridge) or the Luxembourgish curriculum, and students who "*dropped out*"[21] (see *Figure III.5*). All in all, it can be stated that EPS students' primary school trajectories are rather stable and continuous over the subsequent years.

3.5.2 WHAT HAPPENS TO EPS STUDENTS BEFORE AND AFTER FINISHING PRIMARY EDUCATION (P5)?

Since there is no orientation in EPS after primary education, it is worth taking a look at the educational trajectories of EPS students after they finish their primary school in P5 and answering the question whether most of the students remain in EPS as the curriculum allows a smooth transition (i.e., primary and secondary education within one school). In this regard, the 2020/21 grade P5 cohort was selected as it provided the most recent information. Moreover, this sample allows for the analysis of where do these students come from.

As can be seen in *Figure III.6*, 167 students were enrolled in P5 in the school year 2020/21. It should be noted that 112 of these students were enrolled in P4, and 12 of them were enrolled in P5 (i.e., these students repeated P5) in EPS in the school year 2019/20. Thus, 124 students (74.3%) of the 2020/21 P5 cohort were already EPS students the year before. However, it is also noticeable that some students transferred from schools following the Luxembourgish curriculum or other international curricula as well.

[21] Caution should be given to the use of "*drop out*" as a term. Since there is no additional information on the trajectories of these specific students, they are marked as "*dropped out*" when they do not appear before or after a certain school year. This could indicate a transfer to a state-subsidized school, moving to another country, or an actual drop out from the school system altogether.

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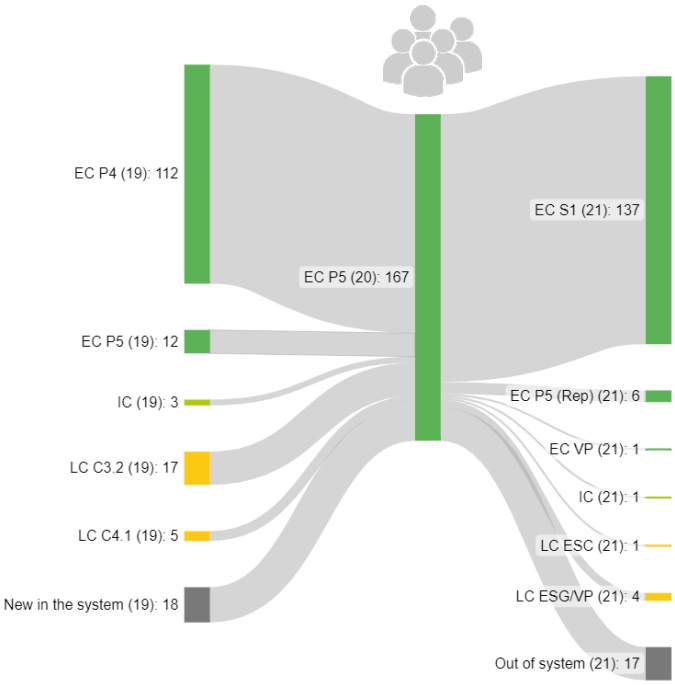
Figure III.6 – Transitions of Grade P5 EPS Students (2020/21 Cohort, *N* = 167)



Note. This Sankey diagram considers students who were registered in P5 in the school year 2020/21 as the initial cohort (*N* = 167). This is indicated by the group symbol. The diagram is most easily read from this starting cohort. EC = European curriculum. LC = Luxembourgish curriculum. IC = other International curricula (e.g. Cambridge). Rep = repetition. Acc = acceleration. The number in brackets represents the school year. To increase readability, some cases in the LC were combined and rearranged under new groups (e.g., LC ESG/VP includes ESG and ESG-VP students in different grade levels).

After considering the transtions from P5, it can be seen that 137 (82.0%) of the students in the aforementioned cohort advanced to S1 in the school year 2021/22. Besides, there are students who follow other transitions: six students with class repetition in EPS (3.6%), one student who moved to VP in the European curriculum, 17 "*drop outs*" (10.2%), and six other students with curriculum change (3.6%). More specifically, while one student went to another international curriculum (here: International Baccalaureate), five students changed to grade 7 in schools following the Luxembourgish curriculum. Inherent in this transition is the skipping of a grade, as primary education in schools following the Luxembourgish curriculum lasts a total of six years. These five students, however, have only completed five years of primary schooling in EPS.

The most recent dataset was used for the analysis. However, since EPS is a rather new educational offer, we also considered previous years to look at stability across cohorts which was only possible for this specific analysis due to the short time span considered (P4 to S1). The patterns seem to be rather stable in the school years 2018/19 and 2019/20. Indeed, most students in P5 transition towards secondary education (S1) in EPS (87.0% and 79.8%). In sum, preliminary findings based on

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small sample sizes may cautiously suggest that there is a relatively stable and continuous trend. The majority of EPS students stay within EPS after finishing primary education in grade P5 and progress to S1.

3.5.3 WHAT IS THE COMPOSITION OF STUDENTS THAT BEGIN SECONDARY EDUCATION IN EPS (S1)? WHERE DO THEY COME FROM? WHAT DO SUBSEQUENT TRAJECTORIES OF S1 STUDENTS LOOK LIKE?

To depict the compositions of students who begin their secondary education in EPS[22], the 2019/20 grade S1 cohort was selected to trace where they come from and to follow the respective students through their entire lower secondary education (S1 to S3). As represented in *Figure III.7*, out of the 318 students who started their secondary education in EPS in the school year 2019/20, 47 students (14.8%) originate from grade P5 in EPS. The largest share of students came from schools following the Luxembourgish curriculum, where students had last attended grade 6 (C4.2) (*N* = 189, 59.4%); who, thus, attended primary school for one additional year compared to the P5 EPS students.

The other students can be characterized as follows: students from other grade levels in the Luxembourgish curriculum, EPS P5 repeaters, or students recently registered in Luxembourg's education system (grey). The fact that the group of EPS students in S1 is largely composed of former students following the Luxembourgish curriculum is mainly due to the fact that the number of students progressing from grade P5 of EPS is still limited - given the fact that the schools were only recently established. However, this has started to change slightly in more recent years. In the school year 2021/22, which was not selected for the Sankey diagrams because the cohort does not allow for the tracing of subsequent trajectories, 50.7% (*N* = 251) of the S1 graders were coming from grade P5 in EPS; while 27.7% (*N* = 137) of them were from C4.2 in primary schools following the Luxembourgish curriculum.

Figure III.7 additionally shows further trajectories of the 2019/20 cohort S1 graders in the first three years of secondary education. As already outlined for the first years of primary education, the first years of secondary education also show rather continuous trajectoires. Most students remain in the European curriculum: 90.6% (*N* = 288) after S1; and 89.6% (*N* = 258) after S2. Those students who

[22] It should be noted that these statistics are based on students in regular tracks in EPS in S1. The students in S1 EPS-VP (*N* = 21) in the school year 2019/20 are not included.

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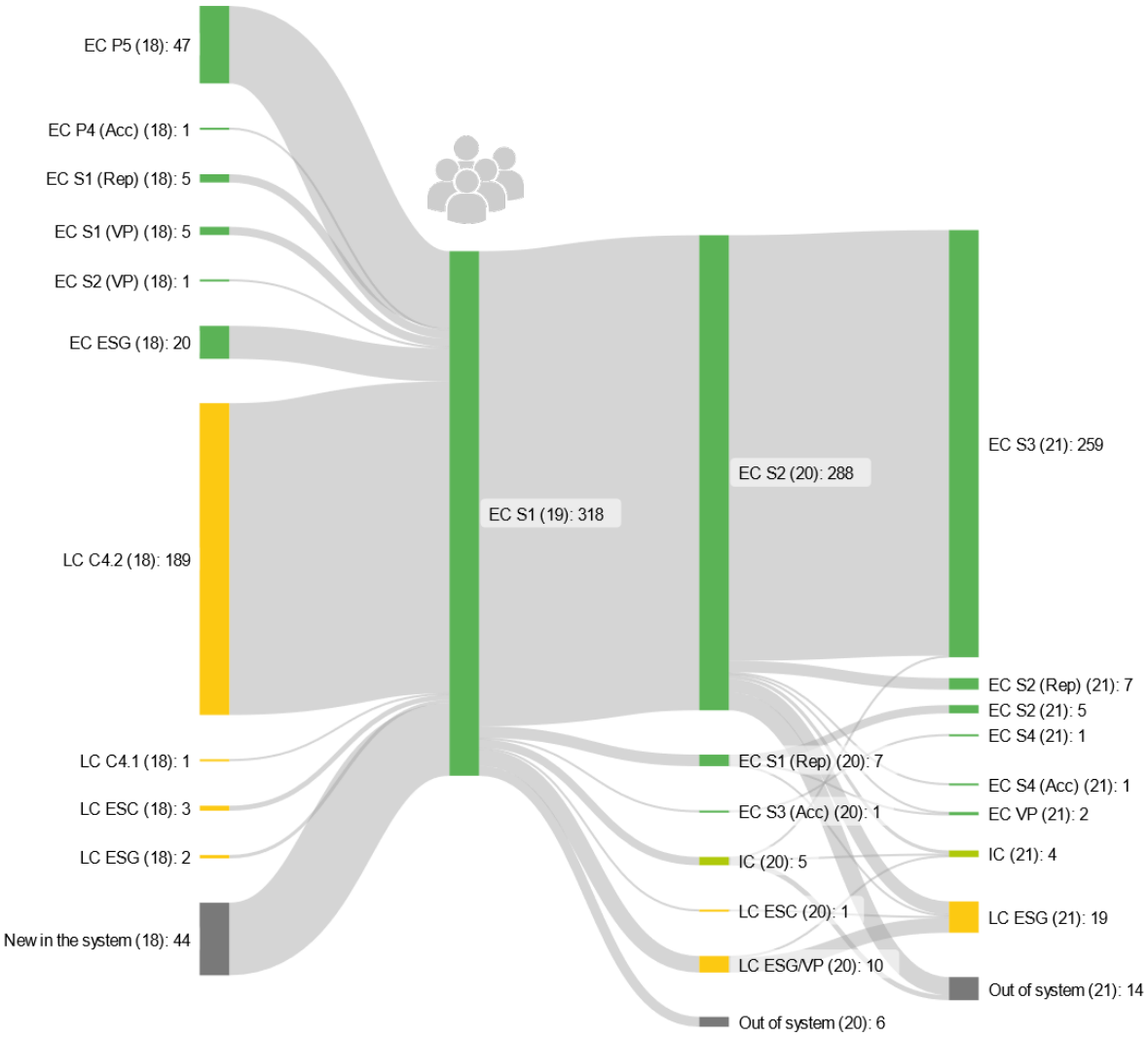
pursue other trajectoires mainly move towards the Luxembourgish curriculum or are not registered any more in the administrative student database.

Figure III.7 - Origins and Secondary School Trajectories of Grade S1 EPS Students (2019/20 Cohort, *N* = 318)



Note. This Sankey diagram considers students who were registered in S1 in the school year 2019/20 as the initial cohort (*N* = 318). This is indicated by the group symbol. The diagram is most easily read from this starting cohort. EC = European curriculum. LC = Luxembourgish curriculum. IC = other International curricula (e.g. Cambridge). Rep = repetition. Acc = acceleration. The number in brackets represents the school year. As students vary vastly on their educational trajectories, there were categories with very few number of students. To increase readability, some categories in the LC were combined and rearranged under new groups (e.g., LC ESG/VP includes ESG and ESG-VP students in different grade levels).

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Comparison of S1 EPS students' lower secondary school trajectories by language groups

As grade S1 in EPS is the first year of secondary education in the European curriculum, and thus, marks an important educational branching point, a closer look into particular language groups follows directly below. We compare the continuity of students' school trajectories after S1, differentiated by language spoken primarily at home, and answer the question of whether patterns of remaining in the chosen curriculum and advancing to the next grade level differ by language group. For that purpose the four major language groups in Luxembourg (i.e., Luxembourgish/German French, English, and Portuguese) (see *Chapters I* and *II*) are used as a basis for a close-up look. The trajectories of these groups are depicted separately in *Figure III.8*.

At the top left, *Figure III.8* shows the trajectoires of the students who primarily speak Luxembourgish and/or German at home (*N* = 61) from S1 to S3 in EPS[23]. It can be observed that most students remain in EPS from year to year resulting in continuity rates[24] of 96.7% (59 out of 61 students) after S1, and 93.2% (55 out of 59 students) after S2. This culminates in a survival rate[25] of 90.1% from S1 to S3 without class repetition. Students who leave the European curriculum are students who transfer to the Luxembourgish curriculum.

The trajectories of S1 EPS students who primarily speak Portuguese at home (*N* = 55, see *Figure III.8* top right) show that less students remain in EPS from year to year than students who primarily speak Luxembourgish and/or German, resulting in continuity rates of 89.1% (49 out of 55 students) after S1, and 77.6% (38 out of 49 students) after S2. This culminates in a survival rate of 69.1% from S1 to S3 without class repetition. Students who leave the European curriculum are students who transfer to the Luxembourgish curriculum or are not registered any more in the administrative student database.

The trajectories of S1 EPS students who primarily speak French at home (*N* = 81, see *Figure III.8* bottom left) show that a high share of students remain in EPS from year to year resulting in continuity rates of 93.8% (76 out of 81 students) after S1, and 93.4% (71 out of 76 students) after S2. This culminates in a survival rate of 87.6% from S1 to S3 without class repetition. Students who leave the European curriculum are students who transfer to the Luxembourgish curriculum or another

[23] The statistics in *Figure III.8* are based on students in regular track in EPS (leading to the European Baccalaureate) in the school year 2019/20. Two Luxembourgish/German speaking students, 15 Portuguese speaking students and one French speaking student in EPS-VP were not reported.
[24] Continuity rate refers to the percentage of students remaining on track without class repetition from one year to the following one.
[25] As explained in *3.5.1*, survival rate is calculated as a product of the continuity rates in between a starting year to a chosen end year of a given cohort without class repetition (here from S1 to S3 for the students attending S1 in the school year 2019/20).

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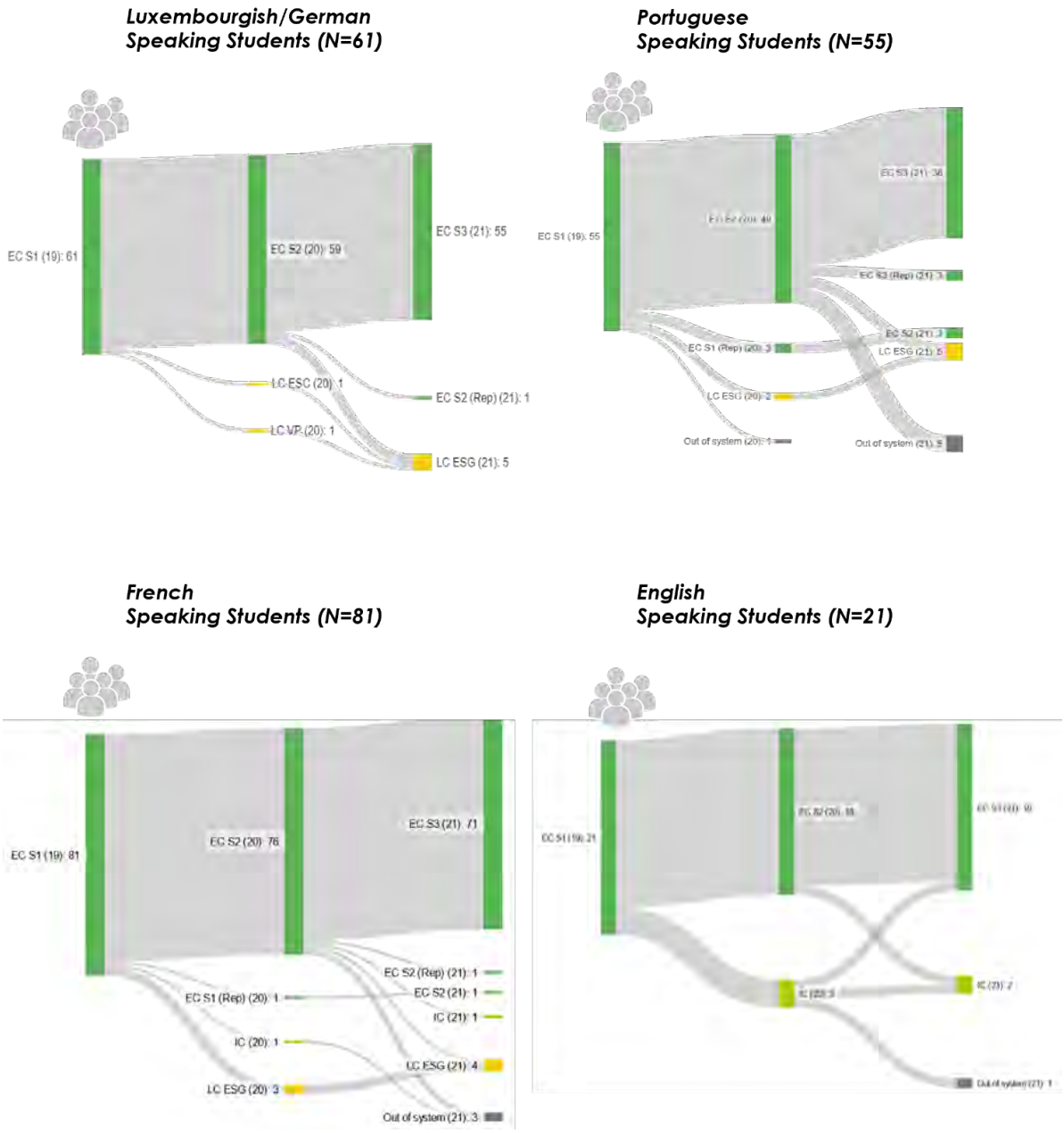
international curriculum or who are not registered any more in the administrative student database.

Figure III.8 – Lower Secondary School Trajectories for Grade S1 EPS Students from S1 to S3 per Language Group (2019/20 Cohort)



Note. These Sankey diagrams consider students of different language groups who were registered in S1 in the school year 2019/20 as the initial cohort. This is indicated by the group symbol. The diagrams are most easily read from this starting cohort. EC = European curriculum. LC = Luxembourgish curriculum. IC = other International curricula (e.g. Cambridge). Rep = repetition. Acc = acceleration. The number in brackets represents the school year. To increase readability, some cases in the LC were combined and rearranged under new groups (e.g., LC ESG/VP includes ESG and ESG-VP students in different grade levels).

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The trajectories of S1 EPS students speaking primarily English at home, who only account for a total of 21 students (see *Figure III.8* bottom right), show continuity rates of 85.7% (18 out of 21 students) after S1, and 94.4% (17 out of 18 students) after S2. This culminates in a survival rate of 80.9% from S1 to S3 without class repetition. Students who leave the European curriculum are students who transfer to other international curricula (International Baccalaureate or Cambridge, both providing English as language of instruction) or who are not registered any more in the administrative student database.

To compare the selected language groups, the survival rate can be used, which reflects the proportion of those who started from S1, and via S2 in the following year, finally ended up in S3 in the third year. It shows that the Luxemburgish/German speaking and French speaking groups have the highest survival rates (90.1% and 87.6%, respectively), while the English speaking group, which consists of only 21 students, has slightly lower rates (80.9%) and the Portuguese language group, with 69.1%, still has a relatively high survival rate, but considerably lower than the comparison groups.

At this point, we briefly reconsider the language section choices of EPS students by language groups, which were described in detail in *Chapter I*. There, it can be seen that the English speaking EPS students were enrolled in an English language section at a rate of 94.7% and the French speaking students at a rate of 88.1% in a French language section. The picture is different for the Luxembourgish/German speaking students, where the proportion of those enrolled in a German language section was comparatively smaller at 70.7%. The Portuguese language group also showed a more varied distribution across language sections with 73.4% of the students enrolled in a French language section, 16.4% in an English language section, and 10.2% in a German language section. Relating these findings to the survival rates in lower secondary education in EPS, one can consider tentative explanations. The comparison of continuity patterns of the language groups depicted in *Figure III.8* allow the following cautious interpretations: French speaking students who are offered a language section that corresponds to their primary language spoken at home show a higher survival rate in EPS than Portuguese speaking students who are taught in a language that does not correspond directly to their native language. The slightly lower survival rate of the English language group who, indeed, also benefits from a language of instruction in EPS that corresponds to their native language cannot be interpreted due to the small number of students. The high survival rate of Luxembourgish/German speaking EPS students who are enrolled across all three language section offered in EPS (see *Chapter I*) cannot be interpreted without

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more differentiated analyses. Future studies with larger student numbers will allow for differentiated conclusions by looking at language groups in different language sections.

3.5.4 HOW MANY CROSS-ENTRY STUDENTS MOVE DIRECTLY TO GRADE S2 IN EPS AFTER PRIMARY EDUCATION FOLLOWING THE LUXEMBOURGISH CURRICULUM?

Given the fact that grade S2 in EPS corresponds to grade 7 (the first year of secondary education in the Luxembourgish curriculum, see *Figure III.4*), curriculum changes from C4.2 (the last year of primary education in the Luxembourgish curriculum) towards S2 in EPS might be possible as students theoretical age is the same there. Thus, we analysed the educational origin of S2 students. As a result, grade S2 student compositions in the school year 2021/22 (*N* = 447)[26] show some heterogeneity in the educational backgrounds, however, the big majority of students (87.2%, *N* = 390) come from grade S1 in EPS. Additionally, there are some repeaters (1.8%) and 25 students (5.6%) who transitioned from schools following the Luxembourgish curriculum to S2 in EPS. A closer look into the latter group shows that there are only two students who transitioned directly from C4.2 in a primary school following the Luxembourgish curriculum to grade S2 in EPS, which might be due to the fact that these students missed the first year of secondary education in EPS. 5.3% of grade S2 students in the school year 2021/22 were registered for the first time in the administrative student dataset so that no further information on their educational origins is available.

3.5.5 HOW CONTINUOUS ARE EPS STUDENTS' TRAJECTORIES AFTER FINISHING THE OBSERVATION CYCLE (S3)?

As explained in *Chapter I*, *Table I.3* (Organisarion of Studies in European Schools), the first three years of secondary education (S1-S3) in EPS are called the observation cycle, in which all students follow a common core approach *(tronc commun)*, and grade S3 marks the final year of the observation cycle (also see *Figure 4*). The 2020/21 grade S3 cohort was selected as it provided the most complete dataset[27]. As it can be seen from *Figure III.9*, 323 students were enrolled in grade S3 in an EPS in the school year 2020/21. From these, the majority, 81.7% (*N*= 264) moved to grade S4 in EPS, five (1.5%) repeated the same grade, and two (0.6%) advanced two grade levels at

[26] These statistics are based on students in regular tracks in EPS in S2. The students in S2 EPS-VP (*N* = 17) in the school year 2020/21 are not included.
[27] These statistics are based on students in regular tracks in EPS in S3. The students in S3 EPS-VP (*N* = 18) in the school year 2020/21 are not included.

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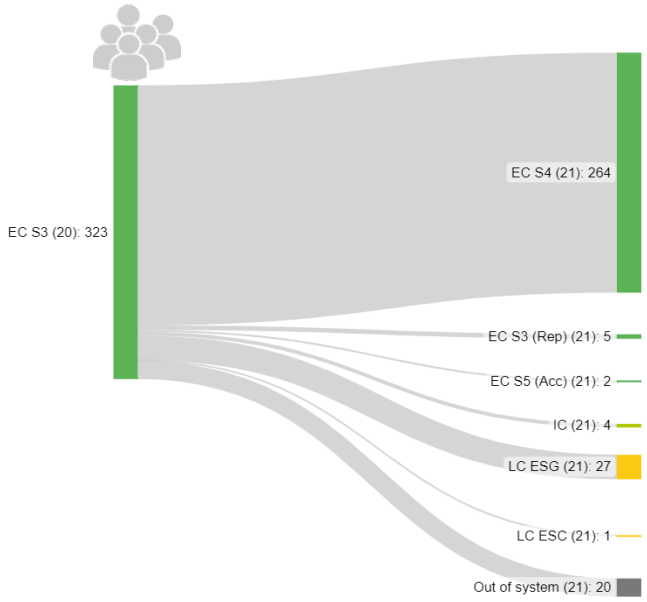
once. Thus, 271 of the students (83.9%) stayed in the European curriculum. Although small in number, there are also students who follow other transitions: four students (1.2%) went to other international curricula and 28 students (8.7%) moved to the Luxembourgish curriculum. Finally, 20 students (6.2%) were not registered anymore in the administrative student database after grade S3.

Based on these preliminary results, which do not yet include complete educational trajectories within EPS due to their recent establishment, it is not possible to draw strong conclusions. Compared to other studies on the Luxembourgish curriculum (Hadjar et al., 2018), the results suggest that there might be higher continuity within EPS. However, more data and longer observation periods are needed to report valid and longitudinal results.

Figure III.9 - Secondary School Trajectories for Grade S3 EPS Students (2020/21 Cohort, *N* = 323)



Note. This Sankey diagram considers students who were registered in S3 in the school year 2020/21 as the initial cohort (*N* = 323). This is indicated by the group symbol. The diagram is most easily read from this starting cohort. EC = European curriculum. LC = Luxembourgish curriculum. IC = other International curricula (e.g. Cambridge). Rep = repetition. Acc = acceleration. The number in brackets represents the school year. To increase readability, some cases in the LC were combined and rearranged under new groups (e.g., LC ESG/VP includes ESG and ESG-VP students in different grade levels).

3.5 CONCLUSION AND OUTLOOK

Class repetition, track changes, and curriculum changes are important factors that influence students' educational trajectories. Luxembourg has a rather decision-intensive structure in schools following the Luxembourgish curriculum with two institutionalised orientation phases (see *3.2*). As for EPS, there is no similar institutionalised orientation phase that urges students to choose between

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school tracks leading to different school leaving certificates. Instead, there is a common core approach *(tronc commun)* for all students until the completion of S3; and afterwards, students are given an opportunity to enroll in courses with varying levels in particular subjects (e.g., advanced mathematics courses are optional starting from S4).

The present chapter on EPS students' educational trajectories provides a first comparison with schools following the Luxembourgish curriculum. Within the European curriculum, delayed careers are less common for primary and secondary school students than for students in the Luxembourgish curriculum. This might be due to the language offer which allows students to continue their education in their L1 (e.g., native language or equivalent) throughout their educational careers. This is not the case in schools following the Luxembourgish curriculum, which offer a multilingual education with a change in instruction language in different school grades and tracks. However, given the small number of students enrolled in the European curriculum compared to the ones in the Luxembourgish curriculum, the results should be interpreted carefully. Moreover, this interpretation should not be confused with the conventional class repetition rates as the analyses only focuses on students who remained in a particular curriculum since they were first enrolled either in the first year of primary or secondary school, and the results are not linked to any background characteristics such as SES, gender, or migration background.

The findings also show some continuity in EPS students' educational trajectories in such a way that most grade P1 EPS students stay within the European curriculum, and the majority of grade P5 EPS students moved towards secondary eduction in EPS. A similar pattern was also observed in the trajectories of grade S3 EPS students as the majority of them continued their studies in EPS upon completion of the observation cycle.

The comparisons of the selected language groups indicate that Luxemburgish/German speaking students had the highest survival rates followed by French speaking and English speaking students. In contrast, Portuguese speaking students had a slightly lower survival rate compared to their peers from the other language groups. The majority of the Luxembourgish/German speaking, French speaking, and English speaking students tend to enroll in language sections corresponding to their language primarily spoken at home. The congruence between students' home language and the language of instruction may be one of the reasons behind students' high survival rates in their educational careers. The lower survival rate for Portuguese speaking students might be due to the fact that there is no such congruence in the language of instruction for this language group (the majority of them enroll in French language sections; see *Chapter I*, *Figure I.20*).

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In conclusion, the preliminary findings reveal that there seems to be higher continuity in EPS, which might be due to it providing students with a non-stratified school offer that is without an institutionalized orientation phase, and with a continuity in the language of instruction. However, more data and longer observation periods are needed to further substantiate these profound, longitudinal results.

3.6 LIMITATIONS

The analyses of this chapter were conducted by using the administrative student dataset (Scolaria, *Fichier élèves*). Given the nature and availability of the data, there are some limitations that need to be kept in mind when interpreting the results.

To begin with, the proportion of students with delayed careers were examined separately for primary and secondary school level in both EPS and in schools following the Luxembourgish curriculum. However, due to the data limitations, the analyses were only conducted within separate school levels (i.e., primary school and secondary school), and only for students who had been enrolled in the same curriculum since the first grade of primary or secondary school. Therefore, delayed careers do not take the students who had changed curricula within a school level into consideration, and delay in secondary school does not include the possible delay already experienced during primary school. According to MENFP (2012), dropouts occur more frequently among students who have already repeated a grade, indicating cumulative experiences of school failure. More data and longer observation periods are needed to report robust and longitudinal results on cumulative experiences of school failure.

Considering the recent establishment of EPS, only one school provides data until S6. Therefore, there is not enough data to analyse complete educational trajectories in EPS and compare them with trajectories of students who attend the Luxembourgish curriculm. Instead, EPS students' educational trajectories were examined at particular branching points to get an understanding of their continuity patterns in primary and secondary school and the composition of students who begin secondary education in EPS. For these analyses, only the most complete datasets were utilized; thus, the starting cohorts differ from one analysis to other depending on the research question.

As former research has shown, students demograpic background characteristics (e.g., migration background, SES, region of residence) have a strong influence on educational achievement and trajectories (Lenz et al., 2021; Backes, 2018; Klapproth & Schaltz, 2015). However, the present

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dataset is limited when it comes to analyses based on migration background or different socioecenomic groups. Therefore, the analyses only focused on different language groups. More data and longer observation periods are needed to report robust and longitudinal results regarding the question of whether particular educational transitions tend to be made social-selectively.

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REFERENCES

Backes, S. (2018). *Heterogenität im luxemburgischen Schulsystem. Eine Mixed-Method-Studie zu Bildungsverläufen aus ungleichheitstheoretischer Perspektive*. Weinheim, beltz.

Boudon, R. (1974). *Education, opportunity, and social inequality: Changing prospects in Western society*. New York City, New York, Wiley.

Hadjar, A. (2019). Educational expansion and inequalities: How did inequalities by social origin and gender decrease in modern industrial societies? In Becker, R. (Ed.*), Research Handbook on the Sociology of Education*. Cheltenham, Edgar Elgar.

Hadjar, A. & Backes, S. (2021). Bildungsungleichheiten am Übergang in die Sekundarschule in Luxemburg. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 86 – 93). Luxemburg, LUCET & MENJE.

Hadjar, A., Fischbach, A. & Backes, S. (2018). Bildungsungleichheiten im luxemburgischen Sekundarschulsystem aus zeitlicher Perspektive. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018* (pp. 59 – 83). Luxemburg, LUCET & MENJE.

Hornung, C., Wollschläger, R., Keller, U., Esch, P., Muller, C. & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 1. und 3. Klasse: Negativer Trend in der Kompetenzentwicklung und kein Erfolg bei Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 44 – 55). Luxemburg, LUCET & MENJE.

Klapproth, F. & Schaltz, P. (2015). Klassenwiederholungen in Luxemburg. In MEN & Université du Luxembourg (Eds.), *Bildungsbericht Luxemburg 2015: Analysen und Befunde* (pp. 76-83). Luxembourg, MEN & Université du Luxembourg.

Koch, K. (2006). Der Übergang von der Grundschule in die weiterführende Schule als biographische und pädagogische Herausforderung. In Ittel, A., Stecher, L., Merkens, H. & Zinnecker, J. (Eds.), *Jahrbuch Jugendforschung* (pp. 69-89). Wiesbaden, VS Verlag für Sozialwissenschaften.

Kramer, R.-T., Helsper, W., Thiersch, S. & Ziems, C. (2009). *Selektion und Schulkarriere: Kindliche Orientierungsrahmen beim Übergang in die Sekundarstufe I*. Wiesbaden, VS Verlag für Sozialwissenschaften.

Lenz, T. & Backes, S. (2021). Orientierungen im luxemburgischen Schulsystem. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 84 – 85). Luxembourg, LUCET & MENJE.

Martin, R., Brunner, M., Schalke, D. & Berger, F. (2011). Soziale Mobilität: Ergebnisse der dritten Phase von MAGRIP. In Brunner, M. & Martin, R. (Eds.), *Die MAGRIP-Studie (1968-2009): Wie beeinflussen sozio-kognitive Merkmale von Kindern im Grundschulalter und ihre Bildungswege*

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ihr späteres Leben als Erwachsene in Luxemburg? (pp. 37-55). Luxembourg, Universität Luxemburg (EMACS).

MENFP (2012). *Le décrochage scolaire au Luxembourg: Parcours et caractéristiques des jeunes en rupture scolaire. Causes du décrochage*. Luxembourg, MENFP.

MENJE (2021a). *Enseignement secondaire général Statistiques globales et analyse des résultats scolaires Année scolaire 2019/2020*. Luxembourg, MENJE.

MENJE (2021b). *Enseignement secondaire classique Statistiques globales et analyse des résultats scolaires Année scolaire 2019/2020*. Luxembourg, MENJE.

MENJE (2022). *Rapport d'activité*. MENJE, Luxembourg.

MENJE (2023). *THE LUXEMBOURGISH EDUCATION SYSTEM 2023*. Luxembourg, MENJE Service presse et communication.

MENFP & EMACS (2007). *PISA 2006: Nationaler Bericht Luxembu*rg. MENFP & University of Luxembourg (EMACS), Luxembourg.

Pfeffer, F. T. (2008). Persistent inequality in educational attainment and its institutional context. *European Sociological Review, 24*(5), 543-565. https://doi.org/10.1093/esr/jcn026

Reichert, M. & Dierendonck, C. (2008). Ketty, Carlos et Goran…au pays du redoublement. In Martin, R., Dierendonck, C., Meyers, C. & Noesen (Eds.), *La place de l'école dans la société luxembourgeoise de demain: Vers de nouveaux modèles de fonctionnement du système éducatif* (pp. 73-110). Brüssel, De Boeck.

Sonnleitner, P., Krämer, C., Gamo, S., Reichert, M., Keller, U. & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 3. und 9. Klasse: Schlechtere Ergebnisse und wirkungslose Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 109 – 115). Luxemburg, LUCET & MENJE.

Stubbe, T. C. (2009). *Bildungsentscheidungen und sekundäre Herkunftseffekte: Soziale Disparitäten bei Hamburger Schülerinnen und Schülern der Sekundarstufe I*. Münster, Waxmann.

Van de Werfhorst, H. & Mijs, J.. (2010). Achievement inequality and the institutional structure of educational systems: A comparative perspective. *Annual Review of Sociology, 36*(1), 407-428. https://doi.org/10.1146/annurev.soc.012809.102538

CHAPTER IV: MATHEMATICS ACHIEVEMENT AT PRIMARY AND SECONDARY SCHOOL LEVEL

A COMPARISON BETWEEN CURRICULA

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4. MATHEMATICS ACHIEVEMENT AT PRIMARY AND SECONDARY SCHOOL LEVEL: A COMPARISON BETWEEN CURRICULA

SUMMARY

- By **integrating the European public schools** (EPS) into the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" (ÉpStan), the full-cohort data including primary and secondary school students collected in autumn of the school year 2022/23 was analysed in an attempt to compare EPS students to their peers in schools following the Luxembourgish curriculum in the subject of mathematics; a subject for which a bigger overlap is assumed between the two school offers than for the language curricula (e.g., German, French).
- With regard to students' academic achievement in mathematics at **primary school level**, EPS students perform on average better than their peers in schools following the Luxembourgish curriculum. Looking at student subgroups with specific background characteristics, the present chapter's findings offer a first preliminary indication that students with a low socioeconomic status (SES) and/or students speaking a language other than Luxembourgish/German at home (i.e., French, Portuguese, English) attending EPS perform on average better in mathematics than their respective peers in schools following the Luxembourgish curriculum.
- At **secondary school level**, results indicate that EPS students are on average performing better than students allocated to the *Enseignement secondaire général - voie d'orientation* (ESG) and the *Enseignement secondaire général - voie de préparation* (ESG-VP), while showing lower mean values in mathematics than students in the *Enseignement secondaire classique* (ESC).
- Findings are preliminary and have to be interpreted with caution due to a number of **important methodological limitations**, such as very small student groups with specific background characteristics (i.e., low SES students at EPS) and the fact that the ÉpStan achievement tasks were developed based on the Luxembourgish curriculum. In addition, the current data analysis does not allow to identify one specific explanation for the observed results.
- Findings at secondary school level need to be interpreted with even more caution due to a number of **specific additional challenges**, such as the problem of comparing an ability-based tracked school system to the comprehensive school system in EPS.
- The **continuous monitoring of EPS** within the ÉpStan will allow an in-depth analysis of potential achievement differences in the future (e.g., investigation of longitudinal data sets, propensity score matching of specific EPS students with comparable students in schools following the Luxembourgish curriculum). By aiming at operationalising the students' learning environment,

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future research studies would furthermore allow to analyse which characteristics of EPS could explain the observed achievement differences.

4.1 THEORETICAL BACKGROUND

With 47.1% (see *Table I.1* in *Chapter I* for details) of inhabitants having a foreign nationality (Klein & Peltier, 2022), Luxembourg is a highly diverse country with regard to the socioeconomic, cultural, and linguistic composition of its population. This multiculturality is reflected in Luxembourg's education system, where recent figures illustrate that 65.4% of primary and 61.4% of secondary school students are speaking a language other than Luxembourgish and/or German at home (see *Figures I.13* and *I.14* in *Chapter I*).

Although this diversity is a great asset, international large-scale assessments (e.g., the OECD's PISA studies) have repeatedly shown that many education systems in modern societies struggle with the adequate handling of increasingly diverse student populations (e.g., Germany, Belgium; OECD, 2018a). This finding also applies to Luxembourg, for which the competencies assessed (e.g., reading, science, or mathematics) were found to be significantly below the OECD average (Fischbach et al., 2016).

Findings from national and international studies illustrate that students with a low socioeconomic status (SES) and/or students speaking a language other than Luxembourgish and/or German at home are especially at risk to struggle academically in Luxembourg's education system (Boehm et al., 2016; Hadjar et al., 2018; Hornung et al., 2021; OECD, 2018a; Sonnleitner et al., 2021). Longitudinal studies working with data from the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" (ÉpStan) have identified significant achievement differences (e.g., in mathematics) both at primary and secondary school level, with low SES students and/or students speaking another language than Luxembourgish and/or German at home being less likely to reach the *Niveau Socle* defined by the national education standards (see *4.3.1* for more details) than their peers who have a high SES and who speak Luxembourgish and/or German at home (Hornung et al., 2021; Sonnleitner et al., 2021).

In order to deal more adequately with the increasing language diversity of the student population in Luxembourg and to counter the educational inequalities that are assumed to result (at least in part) from the curriculum, where high language expectations present an important challenge for a growing number of students, the Luxembourgish government has introduced various educational projects. These encompass, for example, a multilingual education programme

aiming at children aged between one and four, in which French is promoted in playful activities and the students' home languages are integrated through verbal usage (Kirsch, 2018); a French literacy acquisition pilot project established in four primary schools that gives students in C2.1 the possibility of learning to read and write in French (MENJE, 2022); and the introduction of European public schools (EPS) that are following the European curriculum (Eurydice, 2022).

In contrast to schools following the Luxembourgish curriculum, EPS offer language sections (i.e., German, French, and English) in which students choose their first language called L1 (e.g., native language or equivalent) and mainly pursue their educational trajectory in this language. In the first year of primary school, students also select their first foreign language (L2 followed up to their baccalaureate) and in the first year of secondary education, a second foreign language (L3) is required.

Through the opportunity to choose a main language of instruction among the available language sections, EPS might provide a learning environment to their students which is more adapted to the highly diverse student population in Luxembourg and which might in turn reduce the identified educational inequalities that have persistently been identified in schools that follow the Luxembourgish curriculum (Boehm et al., 2016; Hadjar et al., 2018; Hornung et al., 2021; Sonnleitner et al., 2021).

As stated in the *National Education Report* (Lenz et al., 2018), educational research in Luxembourg is pursuing the goal of scientifically accompanying the reforms that have been started in order to provide reliable evidence of their impact on educational success. By integrating the EPS into the ÉpStan (see *4.3.1* for details), the full-cohort data collected in autumn of the school year 2022/23 enables educational research to provide initial and tentative answers to the question whether the diversification of the school offer through the implementation of EPS reduces previously observed inequalities in Luxembourg's education system in regard to students' academic achievement as well as their attitudinal perception of schooling (e.g., motivation to learn, see *4.5*).

4.2 RESEARCH AIM

The research aim of the present chapter is to compare students attending primary and secondary schools following the Luxembourgish curriculum to their peers attending EPS in regard to their achievement in mathematics. The decision to initially focus on mathematics was jointly taken by the Ministry of Education, Children and Youth, the *Service de Coordination de la Recherche et de*

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l'Innovation pédagogiques et technologiques, and the *Luxembourg Centre for Educational Testing*, together with representatives from the EPS.

Current psychometric shortcomings (e.g., task development, comparability of tasks) have resulted in the fact that the ÉpStan administered in EPS only assessed academic achievement in mathematics, a school subject for which a bigger overlap between curricula is assumed than for language subjects (e.g., German, French, see *4.3.2* for a content-based comparison of the mathematics curricula), and which can thus be considered as a suitable starting point to compare EPS and schools following the Luxembourgish curriculum. Creating achievement tests to compare the students' academic achievement in reading or listening comprehension was not (yet) feasible considering that the timepoint of introduction of the different languages (L1 to L3) differs from one language section to another in EPS.

Despite an assumed bigger overlap in the mathematics curricula, it should however be noted that all ÉpStan tasks presented to the 2022/23 cohort (including EPS students) were developed based on the education standards defined by the Ministry of Education, Children and Youth for schools following the Luxembourgish curriculum. The existence of potential differences between the curricula (e.g., later introduction of a certain mathematical concept in EPS or vice versa) should be considered when interpreting the subsequent findings, although they have been taken into account in the development process of the mathematics competency tests (e.g., linguistic item validation by teachers working at EPS, see *4.3.2* for details).

Against this backdrop, the present chapter aims at generating first results on (a) achievement scores in mathematics of students attending schools that follow the Luxembourgish curriculum and their EPS peers in general, and (b) on achievement scores when taking student background characteristics (i.e., gender, SES, language, and migration background) into account more specifically.

Considering that low SES students and/or students speaking a language other than Luxembourgish and/or German at home have repeatedly been found to struggle academically in schools following the Luxembourgish curriculum (see *4.1* for details), understanding how disadvantaged students attending EPS are performing in mathematics seems of central importance regarding the aim of reducing educational inequalities in Luxembourg.

4.3 METHODOLOGY

4.3.1 INFORMATION ON THE ÉPSTAN

The ÉpStan are an established school monitoring tool in Luxembourg and consist of standardized achievement tests, which assess academic achievement of primary and secondary school students in selected key areas of education (e.g., German, French, and mathematics; Martin et al., 2015). Administered in autumn at the beginning of each new learning cycle in Luxembourg's schools, the ÉpStan allow to systematically monitor whether the education standards of the previous learning cycle (as defined by the Ministry of Education, Children and Youth) have been achieved by all students in the respective grade (MENFP, 2011).

The ÉpStan take into account socioeconomic and sociocultural student characteristics (e.g., SES, language, migration background) that were proven to have an important impact on educational success in both national and international studies (e.g., Agirdag & Vanlaar, 2016; Duong et al., 2016; Hornung et al., 2021; Sirin, 2005; Sonnleitner et al., 2021; Voyer & Voyer, 2014). Hence, they ensure a fair performance comparison in Luxembourg's highly diverse student population.

Besides the standardized achievement tests, the ÉpStan entail questionnaires to assess central features of students' motivation to learn (e.g., academic self-concept, academic interest, school anxiety), teacher-student relationship as well as school and class climate.

The ÉpStan are administered in the classroom setting with achievement tests taking approximately 40 to 50 minutes per subject to complete. In order to allow an economical and highly standardized assessment, the ÉpStan items are presented in a closed format (i.e., multiple-choice, true-false, ordering, or matching items) or require short answers only (Fischbach et al., 2014). After the achievement tests, students have approximately 20 minutes to complete the student questionnaire. In primary school, all standardized achievement tests and the student questionnaire are presented in paper-and-pencil format, whereas secondary school students complete computer- or tablet-based tests and questionnaires.

In autumn of the school year 2022/23, the ÉpStan were administered, for the first time, to five grade levels in EPS (P1, P3, P5, S1, and S3); which are equivalent to C2.1, C3.1, C4.1, G7, and G9 in schools following the Luxembourgish curriculum. By integrating the EPS into a well-established school monitoring tool, the ÉpStan can contribute to the systematic evaluation of how a diversification of the national school offer (e.g., choice between different language sections) affects previously

observed performance differences in relation to students' SES, language, and migration background in Luxembourg's education system with regard to academic achievement in mathematics as well as students' attitudinal perception of schooling (e.g., motivation to learn, see *4.5*).

4.3.2 MEASURES

MATHEMATICS ACHIEVEMENT TESTS

To ensure a strong test quality, all items included in the ÉpStan standardized achievement tests are developed by interdisciplinary test development groups that consist of researchers from the ÉpStan team (e.g., expertise in the domains of psychometrics and test development), of teachers actively teaching the different subjects at each respective grade level (e.g., expertise in subject contents and in the educational curriculum), and of members from the Ministry of Education, Children and Youth (e.g., expertise in educational curriculum and in reference documents).

As mentioned above, all tasks presented in the standardized achievement tests are based on the education standards that were defined by the Ministry of Education, Children and Youth for all primary (C2.1, C3.1, and C4.1) and secondary schools (G7, and G9) following the Luxembourgish curriculum. In terms of content regarding primary school, mathematics achievement tests include tasks assessing the following areas: (a) *Space and shapes*, (b) *Numbers and operations*, and (c) *Sizes and measures* (MENFP, 2011, pp. 26–31). In both C3.1 and C4.1, the ÉpStan mathematics tasks are presented in either a contextualized (*problem solving and modeling*) or decontextualized way (*specific basic skills*, which are defined as mathematical knowledge and skills that can be applied independently, without any context or transfer work) to allow an implicit assessment of the content area (d) *Solving arithmetic word problems* (MENFP, 2011, pp. 32–33). In G7, the ÉpStan are designed to assess whether the students have acquired all competences that are expected at the end of C4 of primary education and therefore cover the same four sub-areas as mentioned above (MENFP, 2011, pp. 26–33).

Regarding G9, the mathematics achievement tests include tasks assessing mathematical models and problems that can be allocated to the content areas of (a) *Numbers and operations*, (b) *Figures of plane and space*, (c) *Dependence and variation,* and (d) *Data (*MENFP, 2008, pp. 18–32). Different test versions are created for the three school tracks *Enseignement secondaire classique* (ESC), *Enseignement secondaire général - voie d'orientation* (ESG), and *Enseignement secondaire général - voie de préparation* (ESG-VP). Each test version contains different proportions

of easy, medium, and difficult items that are specifically tailored to adequately assess the assumed competency level of the respective track (Fischbach et al., 2014). In addition, each test version entails at least one third of overlapping tasks that function as anchor items and ensure the comparability of competencies across school tracks (Fischbach et al., 2014).

For all primary schools following the Luxembourgish curriculum, the mathematics achievement test in C2.1 is presented in Luxembourgish, which is the main language of instruction in preschool. In C3.1 and 4.1, mathematics achievement tests are presented in German, which is the language of instruction in primary school. In secondary school (G7 and G9), all items assessing mathematics are developed in German and French (i.e., the language of mathematics instruction in secondary school) with students having the possibility to switch between languages at any time in order to select the language they consider most appropriate to solve the respective task.

In line with international large-scale assessments (e.g., PISA; OECDb, 2018), one global score is used for mathematics achievement, which is normed in such a way that the mean value for all students in Luxembourg lies at 500 points with a standard deviation (mean deviation of the test values from the mean) of 100 points in a reference school year (usually the first school year the respective competency was assessed in the respective grade; Fischbach et al., 2014).

To allow a comparison between the mathematical competences of students attending schools following the Luxembourgish curriculum and EPS students, the same tasks were presented to both groups. Considering that these items are based on the education standards defined by the Ministry of Education, Children and Youth for schools following the Luxembourgish curriculum, the following aspects have been taken into consideration in the development process of the mathematics achievement tests presented to the 2022/23 cohort:

(a) Language versions offered to the students. As described in more detail in *Chapter I*, EPS offer primary and secondary education in three main language sections (i.e., German, French, and English). In order to adapt the ÉpStan to this diverse language offer, mathematics achievement tests were presented to primary school students attending EPS in the language of their respective language section. In secondary schools, mathematics achievement tests were presented in all three languages of the language sections (i.e., German, French, and English) with students having the possibility to switch between language versions at any time to select the language they consider most appropriate to solve the respective task. Further, in this first analysis, measurement invariance has not yet been tested for the different language versions, which limits the statistical

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comparability of the two groups' mean values (i.e., EPS and schools following the Luxembourgish curriculum).

(b) Linguistic item validation by teachers actively teaching in EPS. Considering that the items from the mathematics achievement tests are developed based on the education standards of the Luxembourgish curriculum, a call inviting teachers who actively teach mathematics in EPS was launched with the aim to validate each item linguistically. In collaborative workshops including researchers from the test development groups and EPS teachers from the French and English language sections of the repsective grade levels, each item was discussed with regard to the understandability of mathematical terms or signs (e.g., the usage of "·" as a sign for multiplication in German vs. "*x*" in French). Based on the teachers' feedback, small adaptations were made to the translated versions of the mathematics tasks and instructions in C2.1/P1 were shortened with the aim to reduce the text load as much as possible. Whereas items have been linguistically validated, they have not specifically been validated with regard to their content (e.g., whether a certain mathematical construct has been introduced in both the Luxembourgish and European curriculum). Although no official content validation took place in the scope of the above-mentioned collaborative workshops, the teachers involved were free to comment on individual items when they felt the underlying mathematical competence, or concept, had not been introduced at the respective grade level of the European curriculum. The fact that only a very limited number of items were pointed out based on the content assessed, appeared to be in line with observations made during the comparison of the mathematics curricula implemented in the two school offers. Thus, the curricula appear to be comparable in terms of the content with a slight difference in its classification into domains. While at primary school level, the domains are listed as (a) *Space and shapes*, (b) *Numbers and operations*, and (c) *Sizes and measures* in the Luxembourgish curriculum (MENFP, 2011, pp. 26–31), they are listed as (a) *Numbers*, (b) *Operations*, (c) *Measurement and units*, (d) *Shape and space*, and (e) *Data handling* in the European curriculum (Schola Europaea, 2022, p. 31). In comparison, the domains at secondary school level are (a) *Numbers and operations*, (b) *Figures of plane and space*, (c) *Dependence and variation,* and (d) *Data* in the Luxembourgish curriculum (MENFP, 2008, pp. 18–32), and (a) *Numbers,* (b) *Algebra,* (c) *Geometry,* (d) *Statistics and probability,* and (e) *Set theory* in the European curriculum (Schola Europaea, 2019, p. 34), both corresponding to similar content and learning objectives.

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(c) Choice of test version for S3 classes of the EPS. Whereas secondary school students who attend schools following the Luxembourgish curriculum are allocated to one of three schools tracks (ESC, ESG, or ESG-VP; Lenz & Heinz, 2018) in G7 based on their academic abilities, secondary school students attending EPS are enrolled in one common track until S3, which marks the end of lower secondary education. Considering that different test versions are available for the three different school tracks as described in more detail above, directors of the EPS were given the choice of the test version to be presented to their S3 classes with the vast majority selecting the ESG version (i.e., intermediary school track in schools following the Luxembourgish curriculum). In light of the fact that the test versions are psychometrically linked using at least one third of overlapping tasks that function as anchor items (Fischbach et al., 2014), the test versions measure on the same scale. Thus, a comparison between S3 and G9 classes following the Luxembourgish curriculum remains possible.

STUDENT BACKGROUND CHARACTERISTICS

Parents (primary school) and students (secondary school) provide information on the background characteristics of socioeconomic status (SES), language, and migration background via a questionnaire (i.e., self-reports). The *International Socio-Economic Index of Occupational Status* (ISEI, Ganzeboom, 2010; Ganzeboom et al., 1992) was used for the classification of a student's SES based on the occupational status of the parents. The Index can take on values between 10 and 90. Within ÉpStan, the highest available ISEI value (HISEI) of either the father or the mother (or the respective caretaker) is considered. This value is also used to classify students into high and low SES groups. The lowest 25% of the distribution are defined as having a low SES and the highest 25% as having a high SES (Muller et al., 2014). When it comes to migration background, students are considered as natives when the students themselves and at least one of their parents were born in Luxembourg. As the language of literacy acquisition in Luxembourg is German, speaking Luxembourgish and/or German at home is assumed to provide students with the language resources needed for literacy acquisition in primary schools following the Luxembourgish curriculum (Hadjar et al., 2018; Hornung et al., 2023). To compare students based on their languages, students are considered to have a specific language background (i.e., Luxembourgish/German, French, Portuguese, or English) when they speak the respective language with at least one of their parents at home. This means that a student can be found in different language groups (e.g., a student speaking Luxembourgish with its mother and Portuguese with its father is considered to a Luxembourgish and Portuguese language background). In line with *Figures I.13* and I.*14* from *Chapter I*, in which Luxembourgish/German,

French, Portuguese, and English were identified as languages primarily spoken at home in EPS and schools following the Luxembourgish curriculum, the present chapter focuses on those four language groups. With regard to gender, the student administrative database of the Ministry of Education, Children and Youth has been used in order to split the student population into male and female students.

4.3.3 THE ÉPSTAN SAMPLE

The results presented in the present chapter are based on representative data from approximately 28.700 students from five different grade levels of primary and secondary school (C2.1, C3.1, C4.1, G7, and G9 in schools following the Luxembourgish curriculum, and P1, P3, P5, S1, and S3 in EPS). Looking at primary school level, 869 students attended EPS, which equals to 4.8% of the full ÉpStan cohort of primary school students. With regard to secondary education, 1.032 students attended EPS (9.6% of the full ÉpStan cohort of secondary school students). The total number of students at both primary and secondary school level might differ from official Ministry numbers considering that some children did not take part in the ÉpStan (e.g., due to sickness on the day of the data collection). Although the *International School Michel Lucius* takes part in the ÉpStan both at the primary and secondary school level, students following its UK-Style education (i.e., A-levels; *N* = 239 in primary and *N* = 259 in secondary school) have been excluded from the sample used in the present chapter as its aim is to focus on schools following the European curriculum. The sociodemographic characteristics of the two student populations (i.e., EPS students and students in schools following the Luxembourgish curriculum) can be found in *Table IV.1* (see *4.3.2* for details on the measures used to assess the students' background characteristics.

4.4 RESULTS

4.4.1 MATHEMATICS ACHIEVEMENT AT PRIMARY SCHOOL LEVEL

In a first step, the present chapter addresses mathematics achievement scores among students attending primary schools following the Luxembourgish curriculum and their EPS peers. *Figure IV.1* shows the distribution of academic achievement in mathematics for all three primary school grades split by curriculum. Each student's ÉpStan score is represented by an individual dot and the density of the dots reflects the size of each group (i.e., the total *N* of students as indicated on the x-axis). The mean values are depicted in the center of each distribution. This visualization furthermore allows to graphically display outliers (e.g., students with a particularly low or high ÉpStan score in mathematics).

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Table IV.1 - Detailed Sample Description of the ÉpStan Cohort for the School Year 2022/23

							Language background			
			N	HISEI (mean)	% female	% natives	% Lux/German	% French	% Portuguese	% English
Schools following the Luxembourgish curriculum	EF	C2.1	5876	51.2	48.9%	39.2%	42.3%	20.9%	23.0%	5.9%
		C3.1	5861	49.8	48.3%	39.1%	40.9%	18.5%	21.6%	4.9%
		C4.1	5432	49.3	48.9%	40.7%	42.1%	19.9%	23.2%	4.2%
	ES – G7	ESC	1178	53.3	54.1%	53.1%	58.5%	21.5%	10.9%	3.0%
		ESG	1826	39.4	47.9%	33.2%	35.4%	15.1%	33.3%	1.9%
		ESG-VP	524	33.3	40.3%	22.1%	21.2%	10.5%	45.2%	1.9%
	ES – G9	ESC	1817	56.0	46.2%	56.7%	61.3%	21.5%	10.7%	2.9%
		ESG	3728	39.7	45.3%	30.9%	33.2%	13.5%	37.3%	1.6%
		ESG-VP	609	34.4	41.9%	19.7%	23.6%	12.2%	42.7%	1.5%
EPS	EF	P1	363	60.5	48.8%	11.6%	14.6%	43.3%	11.6%	24.8%
		P3	268	58.7	50.0%	9.7%	13.8%	45.9%	10.4%	20.5%
		P5	238	60.1	44.5%	16.0%	15.1%	42.9%	9.7%	18.9%
	ES	S1	623	51.8	45.3%	15.6%	20.9%	33.4%	18.5%	12.0%
	ES	S3	409	52.1	46.0%	21.0%	27.4%	36.7%	19.8%	12.0%

Note. *N* = Number of students. HISEI = Highest available *Index of Socio-Economic Index of Occupational* Status value. EF = *Enseignement fondamental* (primary school level). ES = *Enseignement secondaire* (secondary school level). ESC = *Enseignement secondaire classique*. ESG = *Enseignement secondaire général - voie d'orientation*. ESG-VP = *Enseignement secondaire général - voie de préparation*. For details on the operationalisation of student background variables, see *4.3.2*. Due to methodological differences in the composition of the HISEI variable, means cannot be compared between EF and ES.

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With regard to achievement scores in mathematics, *Figure IV.1* indicates that students attending EPS display higher mean values than their peers attending schools following the Luxembourgish curriculum across all three grade levels. As described in more detail in section *4.3.2*, the ÉpStan metric (i.e., the y-axis) is normed in such a way that the mean value for all students in Luxembourg lies at 500 points with a standard deviation of 100 points (Fischbach et al., 2014) for the respective reference school year. In the subject of mathematics, regular fluctuations of ± 10 ÉpStan points were observed from one year to another at both primary and secondary school level (see Fischbach et al., 2021, *Figures 1* and *3*) and these rather small changes should generally not be interpreted as considerable differences in academic achievement. With group differences of approximately 20 ÉpStan points in C2.1/P1 and C3.1/P3 and close to 40 ÉpStan points in C4.1/P5, the observed achievement differences that are in favor of primary school students attending EPS go beyond regularly observed fluctuations in the subject of mathematics and thus seem to be an important indication that EPS students are on average performing better than students in schools following the Luxembourgish curriculum, and this is most prominent in C4.1/P5.

Figure IV.1 - Distribution of Achievement in Mathematics Separately by Curricula at Primary School Level (School Year 2022/23)

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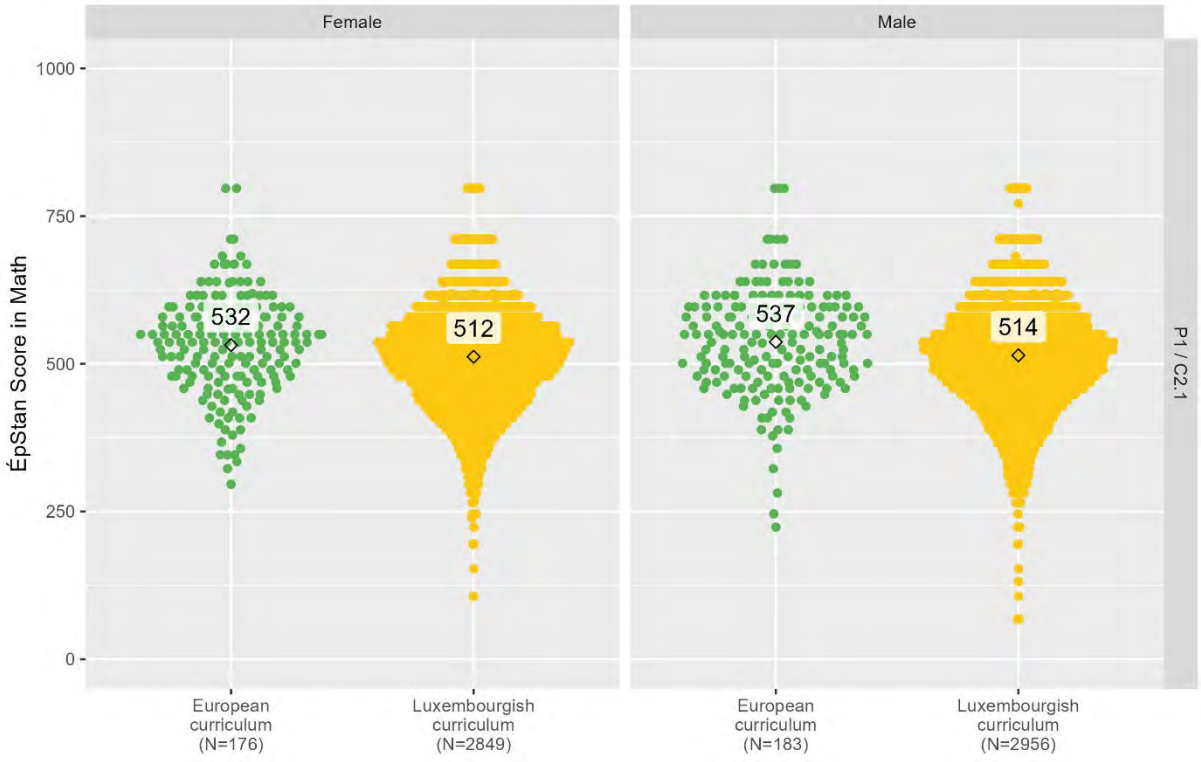
Considering that low SES students, students having a migration background, and/or students speaking a language other than Luxembourgish and/or German at home have repeatedly been found to struggle academically in schools following the Luxembourgish curriculum (see *4.1* for details), the present chapter aims, in a second step, to understand how students in EPS with specific background characteristics perform in mathematics when compared to peers with the same characteristics attending schools following the Luxembourgish curriculum.

As indicated in *Table IV.1* (see *4.3.3*), the distribution of primary school students by **gender** appear to be comparable across school offers with 48.3 to 48.9% female students following the Luxembourgish curriculum compared to 44.5 to 50.0% female students in EPS. *Figure IV.2* shows the distribution of academic achievement in mathematics for all three primary school grades separately by curriculum and gender. With regard to potential achievement differences in mathematics, *Figure IV.2* indicates that students attending EPS show higher mean values (e.g., ≈ 20 ÉpStan points higher in C2.1/P1 and ≈ 40 ÉpStan points higher in C4.1/P5) than students in schools following the Luxembourgish curriculum across all grade levels, irrespective of gender.

Figure IV.2 - Distribution of Achievement in Mathematics Separately by Curricula and Gender at Primary School Level (School Year 2022/23)



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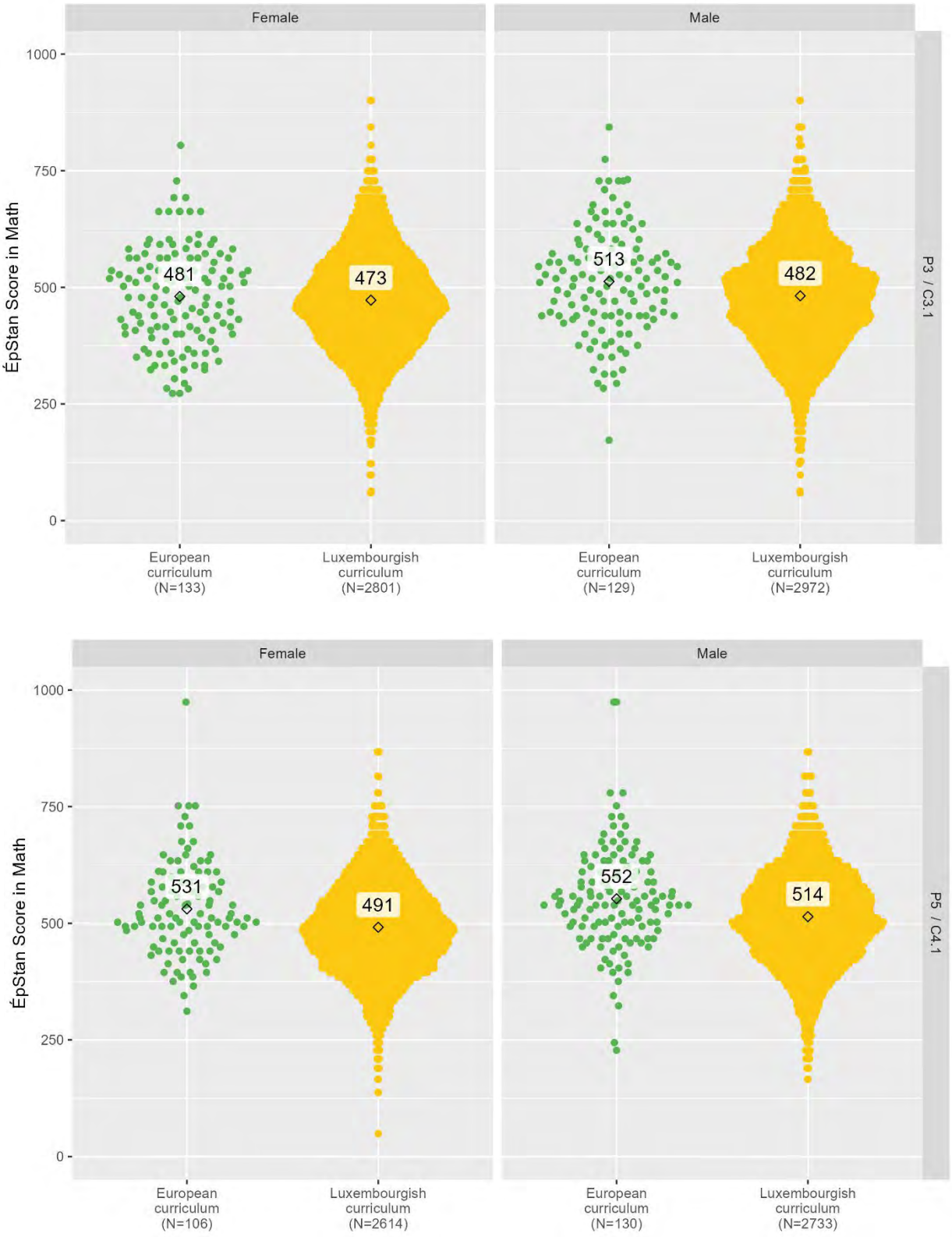

These results seem to indicate that both male and female students in EPS are on average performing better than students in schools following the Luxembourgish curriculum with the group difference

being highest in C4.1/P5 and lowest for female students in C3.1/P3 with a mean value that is only 8 ÉpStan points higher than for their female peers in schools following the Luxembourgish curriculum. When looking at gender differences within systems, male students demonstrate higher mean values than their female peers both in EPS and in schools following the Luxembourgish curriculum, and this is especially the case in C4.1/P5. Although not the focus of the present chapter, this finding is in line with the typically reported pattern in national and international studies of male students outperforming female students in the subject of mathematics (e.g., Boehm et al., 2016; Winkelmann et al., 2008; Zhu, 2007).

Besides gender, the present chapter addresses whether students from low **socioeconomic status (SES)** households differ in their academic achievement in mathematics from their comparably low SES peers attending EPS. As can be seen in *Table IV.1*, the student population in EPS is characterized by a higher mean SES (HISEI mean of ≈ 60) across all primary school grades than students in schools following the Luxembourgish curriculum (HISEI mean of ≈ 50). Consequently, this observed difference in mean HISEI translates into smaller groups of students characterized as low SES in EPS (e.g., 14 students in C4.1/P5, see *Figure IV.3*) compared to the Luxembourgish curriculum. The average HISEI of low SES students in EPS seems comparable to the average HISEI of low SES students in schools following the Luxembourgish curriculum (e.g., HISEI of 33 in EPS and of 31 in schools following the Luxembourgish curriculum in C2.1/P1). The same holds true for the average HISEI of high SES students (e.g., HISEI of 68 in EPS and of 69 in schools following the Luxembourgish curriculum in C2.1/P1). Nevertheless, in light of the small student groups having a low SES in EPS, the results on academic achievement differences in mathematics based on SES should be interpreted with caution.

Figure IV.3 shows the distribution of academic achievement in mathematics for all three primary school grades separately by curriculum and SES. Looking at high SES students (i.e., highest 25% of the HISEI distribution), results in all three primary school grades indicate small achievement differences in favor of students attending schools following the Luxembourgish curriculum, which however fail to differ considerably from the previously described regular fluctuations of ± 10 ÉpStan points. In general, the findings for high SES students imply no important achievement differences, with high SES students performing well irrespective of their school's curriculum.

For low SES students (i.e., lowest 25% of the HISEI distribution), a different pattern can be observed in *Figure IV.3*. With mean differences ranging from ≈ 30 ÉpStan points (C3.1/P3 and C4.1/P5) to 45 ÉpStan points in C2.1/P1, the observed academic achievement differences in mathematics in favor of low SES students attending EPS go beyond regularly observed fluctuations and thus appear to be a preliminary indication that low SES students in EPS perform better, on average, than their low SES peers in schools following the Luxembourgish curriculum. This is most prominently visible in C2.1/P1. As visualized by the small number of individual points in *Figure IV.3*, it must be kept in mind, however, that

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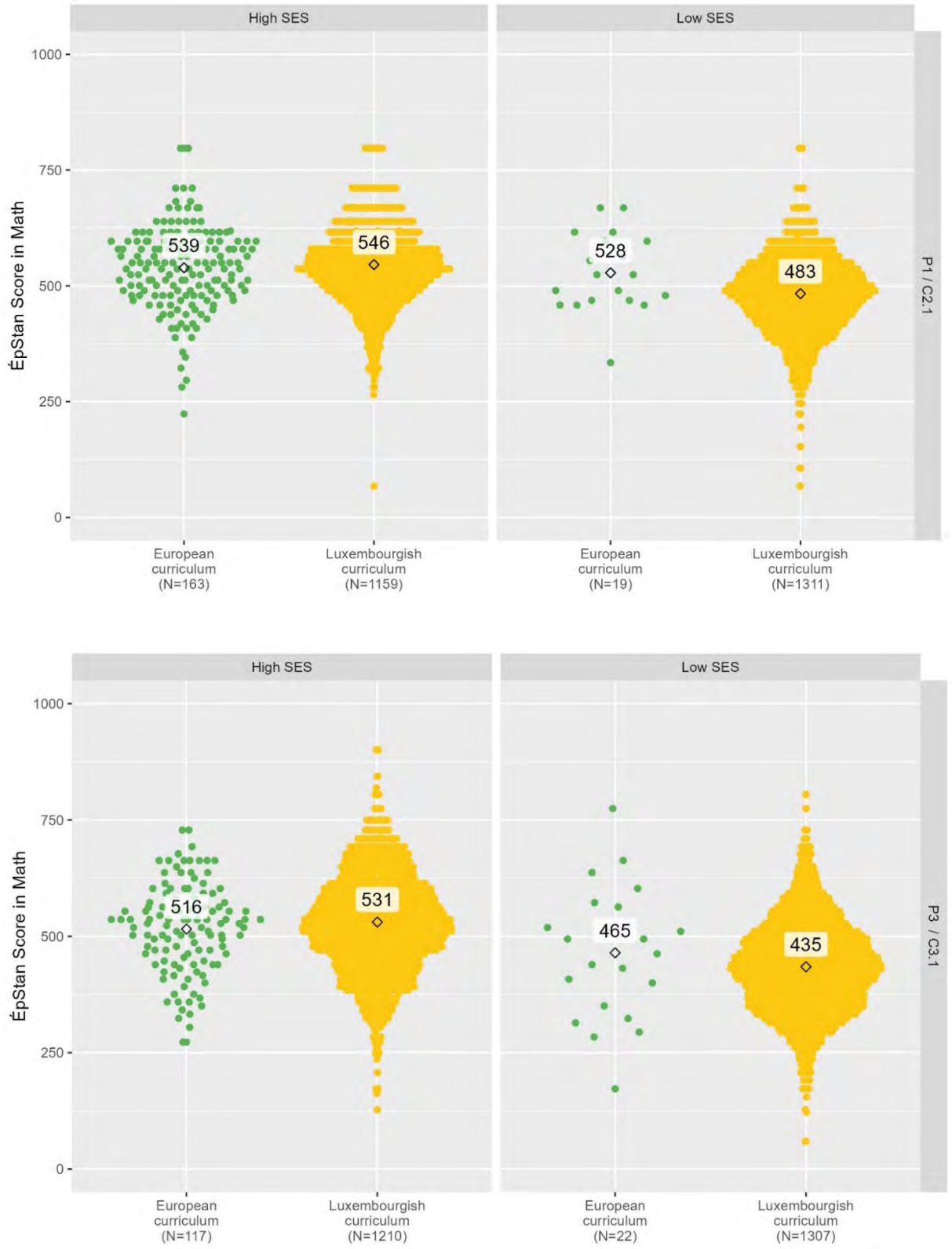
these results are based on very small *N*s (between 14 and 22 students only) and should thus be interpreted with caution.

Figure IV.3 - Distribution of Achievement in Mathematics Separately by Curricula and SES at Primary School Level (School Year 2022/23)



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In addition to gender and SES, the present chapter investigates how students with a **migration background** attending EPS perform compared to their peers with a migration background in schools following the Luxembourgish curriculum. As shown in *Table IV.1*, the percentage of native students (i.e., students whose own country of birth is Luxembourg and so is that of at least one of their parents) lies at approximately 40% in schools following the Luxembourgish curriculum. Ranging between 10% in C3.1/P3 and 16% in C4.1/P5, the amount of native students is considerably lower in EPS. Similar to the background variable of SES, this difference in the student population translates into small groups of native students in EPS (e.g., 26 native students in C3.1/P3, see *Figure IV.4*). In addition, it has to be presumed that EPS students with a migration background are coming from different countries of origin (e.g., other non-EU countries) than their peers with a migration background in schools following the Luxembourgish curriculum (e.g., Portuguese). In light of small student groups and potential differences in the countries of origin between school curricula, the following results on achievement differences in mathematics based on migration background must be interpreted with caution.

Figure IV.4 shows the distribution of academic achievement in mathematics for all three primary school grades separately by curriculum and migration background. No consistent pattern is visible for native students across all primary school grades. Whereas native students in EPS show lower mean values in C2.1/P1 (11 ÉpStan points) and C3.1/P3 (30 ÉpStan points) than native students in schools following the Luxembourgish curriculum, native students attending EPS seem to perform better than

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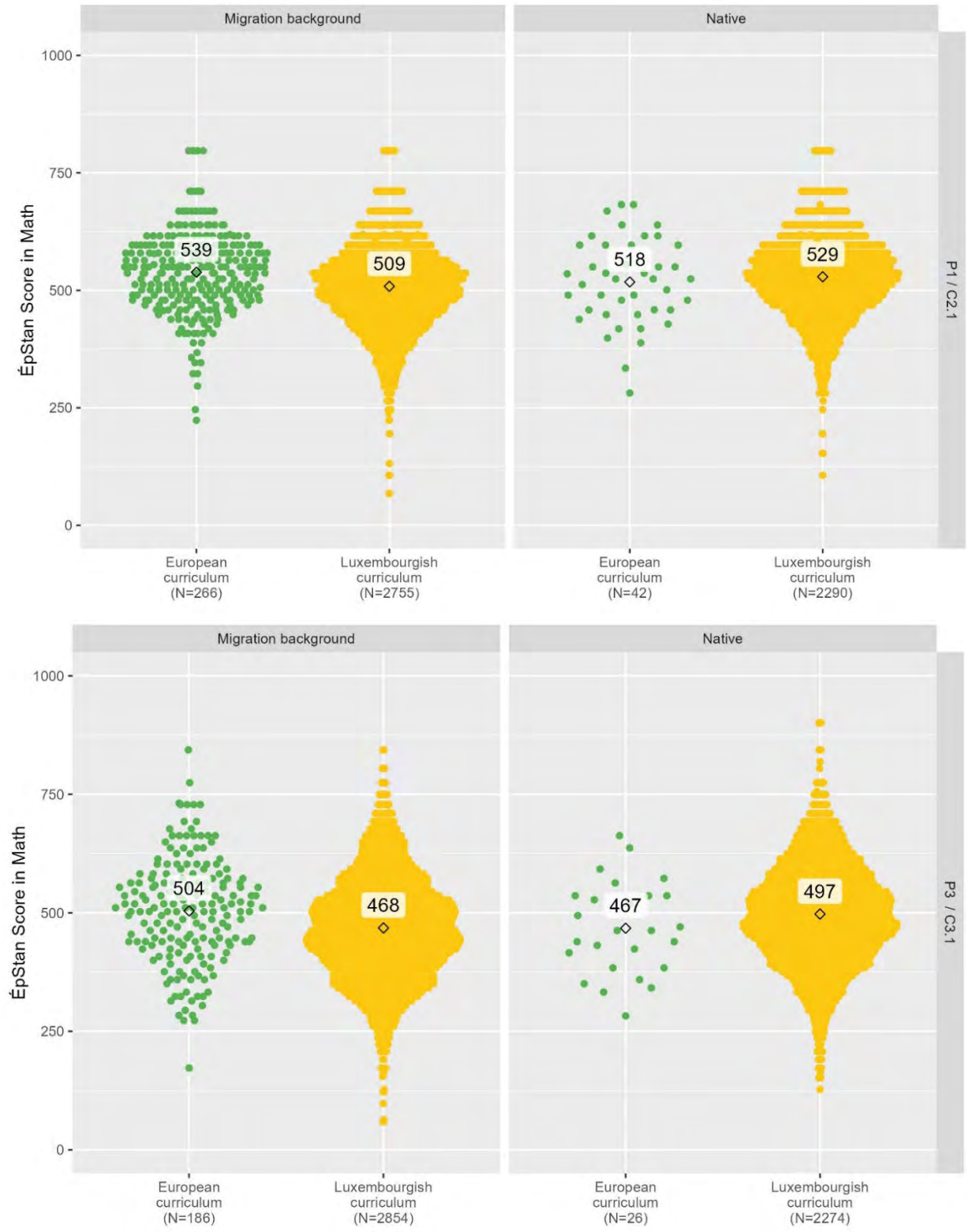
their native peers attending schools following the Luxembourgish curriculum in C4.1/P5 (29 ÉpStan points; see *Figure IV.4*).

Figure IV.4 - Distribution of Achievement in Mathematics Separately by Curricula and Migration Background at Primary School Level (School Year 2022/23)



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For students with a migration background, a consistent pattern can be found across all three primary school grades. Mean value differences in favor of students with a migration background attending EPS range from ≈ 30 ÉpStan points (C2.1/P1 and C3.1/P3) to 48 ÉpStan points in C4.1/P5. Considering that the group differences in favor of EPS students with a migration background go beyond regularly observed fluctuations (± 10 ÉpStan points), they indicate that students with a migration background attending EPS appear to struggle considerably less in mathematics than their peers with a migration background in schools following the Luxembourgish curriculum.

However, as already indicated, an interpretation of these findings must keep in mind that being *non-native* (i.e., having a migration background) potentially represents very different socioeconomic and sociocultural groups at EPS than in schools following the Luxembourgish curriculum. Looking at the average HISEI, it has to be underlined that EPS students having a migration background have a considerably higher mean HISEI (e.g., 61 in C2.1/P1) than their peers with a migration background in schools following the Luxembourgish curriculum (e.g., 49 in C2.1/P1). Hence, from these findings, it cannot be concluded that students irrespective of their specific migration background perform better at EPS, and potentially even better than native students at schools following the Luxembourgish curriculum. This cautionary note becomes even more relevant in light of the very small *N*s, particularly so for the group of native students in EPS.

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As a last variable of interest, the present chapter is about understanding whether students with a specific **language background** (i.e., Luxembourgish/German, French, Portuguese, and English) in EPS perform better than students with the same language background in schools following the Luxembourgish curriculum, where their respective language background might be further away from the language of instruction (e.g., a Portuguese speaking student learning to read and write in German in a school following the Luxembourgish curriculum in comparison to a Portuguese speaking student learning to read and write in French in EPS).

A first language group that has been taken into consideration are students speaking Luxembourgish and/or German at home with at least one of their parents. As displayed in *Table IV.1*, the percentage of students speaking Luxembourgish and/or German at home reaches ≈ 42% in schools following the Luxembourgish curriculum. With a percentage of ≈ 15%, this share is considerably lower in EPS. Similar to the variables of SES and migration background, this difference translates into small student groups in EPS that are speaking Luxembourgish and/or German at home.

Figure IV.5 illustrates the distribution of academic achievement in mathematics for all three primary school grades separately by curriculum for students speaking Luxembourgish and/or German at home. No consistent pattern is visible across all primary school grades. In C2.1/P1 and C3.1/P3, students with a Luxembourgish and/or German language background attending EPS have lower mean values than those in schools following the Luxembourgish curriculum (15 and 25 ÉpStan points less, respectively).

With regard to C4.1/P5, EPS students speaking Luxembourgish and/or German at home have a mean value that is 72 ÉpStan points higher than for students with a Luxembourgish and/or German language background in schools following the Luxembourgish curriculum. This divergent pattern observed in C4.1/P5 does not change when excluding students with very high ÉpStan values (as visualized in *Figure IV.5* by the individual dot representing an ÉpStan score of 974), but should nevertheless be interpreted with caution due to the small amount of EPS students with a Luxembourgish/German language background.

When looking at students that are speaking French at home with at least one of their parents, *Table IV.1* shows that ≈ 20% of the student population in schools following the Luxembourgish curriculum have a French language background. Ranging from 42 to 46%, this share is higher in EPS and translates into considerably bigger comparison groups than for all other language groups (see higher density of individual dots and *N*s indicated on the x-axis of *Figure IV.6*).

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Figure IV.5 - Distribution of Achievement in Mathematics Separately by Curricula for Luxembourgish/German Speaking Students at Primary School Level (School Year 2022/23)

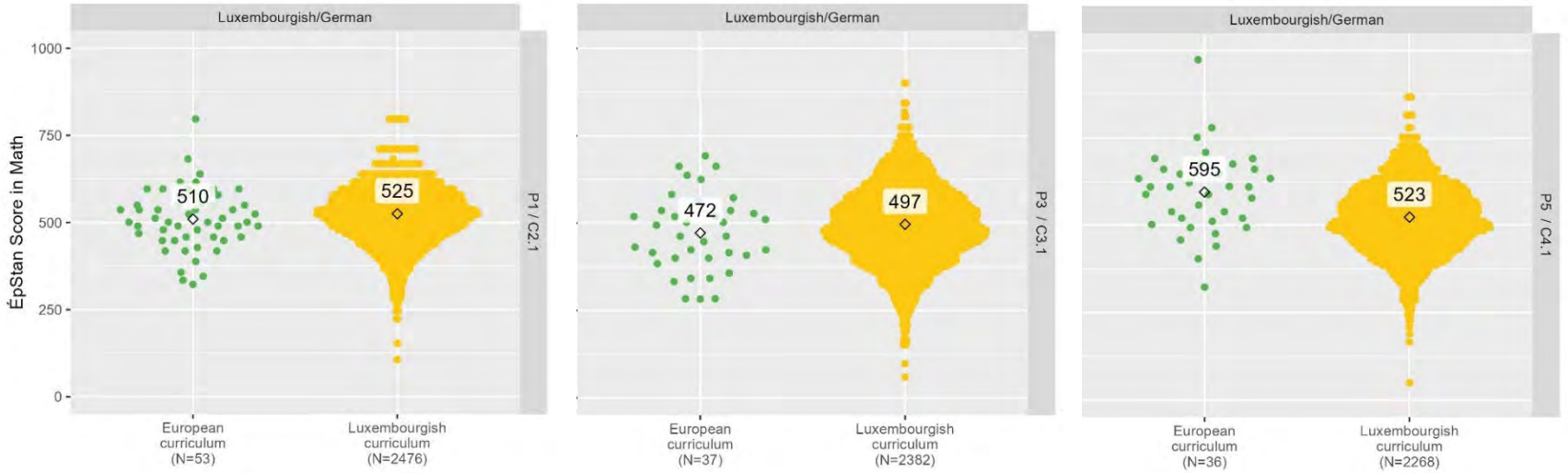
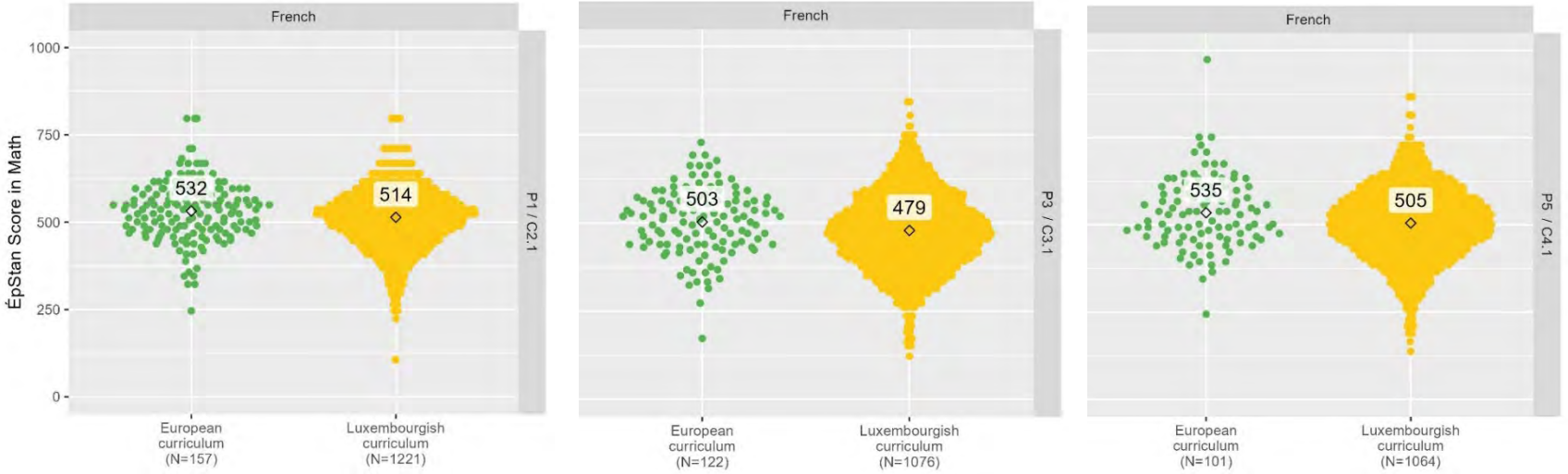


Figure IV.6 - Distribution of Achievement in Mathematics Separately by Curricula for French Speaking Students at Primary School Level (School Year 2022/23)



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As can be seen in *Figure IV.6*, students with a French language background attending EPS show higher mean values in mathematics ranging from 18 ÉpStan points in C2.1/P1 to 30 ÉpStan points in C4.1/P5 than French speaking students in schools following the Luxembourgish curriculum. This consistent pattern of higher mean values, going beyond regularly observed fluctuations in the subject of mathematics (± 10 ÉpStan points), thus seems to be an important first indication that students with a French language background attending EPS are on average performing better in mathematics than their French speaking peers in schools following the Luxembourgish curriculum.

Looking at students that are speaking Portuguese at home with at least one of their parents *Table IV.1* indicates that ≈ 23% of the students in schools following the Luxembourgish curriculum have a Portuguese language background. With a percentage of ≈ 10%, the share of students with a Portuguese language background is lower in EPS. Similar to Luxembourgish and/or German as language background, this small share of the student population translates into small groups of students in EPS that speak Portuguese at home (e.g., 23 students in C4.1/P5, see *Figure IV.7*).

Figure IV.7 illustrates the distribution of academic achievement in mathematics for all three primary school grades separately by curriculum for students speaking Portuguese at home. As for students with a Luxembourgish and/or German language background, there is no consistent pattern for students speaking Portuguese at home across all primary school grades.

In C2.1/P1 and C4.1/P5, students with a Portuguese language background display higher means in mathematics when attending EPS than their peers in schools following the Luxembourgish curriculum, with a difference of 28 and 58 ÉpStan points, respectively. Considering that these differences go beyond fluctuations that are regularly observed in the ÉpStan (± 10 points), these results seem to indicate that students with a Portuguese language background, who as a group, consistently struggle in schools following the Luxembourgish curriculum are on average performing better than their peers when they attend EPS. This pattern can however not be observed in C3.1/P3, where Portuguese speaking students in school following the Luxembourgish curriculum display a comparable mean value (difference of 9 ÉpStan points) as their peers attending EPS.

Although this group difference can be considered a regular fluctuation that does not indicate considerable disparities between the two curricula, the fact that this divergent pattern changes when excluding the student with the lowest ÉpStan value (as visualized in *Figure IV.7* through the individual dot representing an ÉpStan score of 172) underlines once more that the results for Portuguese speaking students should be interpreted with caution due to small *N*s in EPS, especially

in light of wide spread distributions (i.e., distribution of Portuguese speaking students in EPS in C3.1/P3).

For students speaking English at home with at least one of their parents, *Table IV.1* indicates that ≈ 5% of the student population in schools following the Luxembourgish curriculum have an English language background. Ranging from 19 to 25%, the share of students speaking English at home is considerably higher in EPS. Although the amount of English speaking students is relatively small in schools following the Luxembourgish curriculum, the *N*s for comparison groups of English speaking students are higher than for students with a Luxembourgish/German or Portuguese language background (see higher density of individual dots and *N*s indicated on the x-axis of *Figure IV.8*).

As visualized in *Figure IV.8*, primary school students with an English language background attending EPS show higher mean values in mathematics than English speaking students attending schools that follow the Luxembourgish curriculum in all three grades. The difference observed in C3.1/P1 falls into regularly observed fluctuations in the ÉpStan. Nevertheless, by going beyond regularly observed fluctuations in the subject of mathematics (± 10 ÉpStan points) in both C2.1/P1 and C4.1/P5, with mean values that are 31 and 47 ÉpStan points higher, respectively, these findings appear to be a first indication that English speaking students attending EPS are on average showing better academic achievement scores in mathematics than their English speaking peers in schools following the Luxembourgish curriculum.

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Figure IV.7 - Distribution of Achievement in Mathematics Separately by Curricula for Portuguese Speaking Students at Primary School Level (School Year 2022/23)

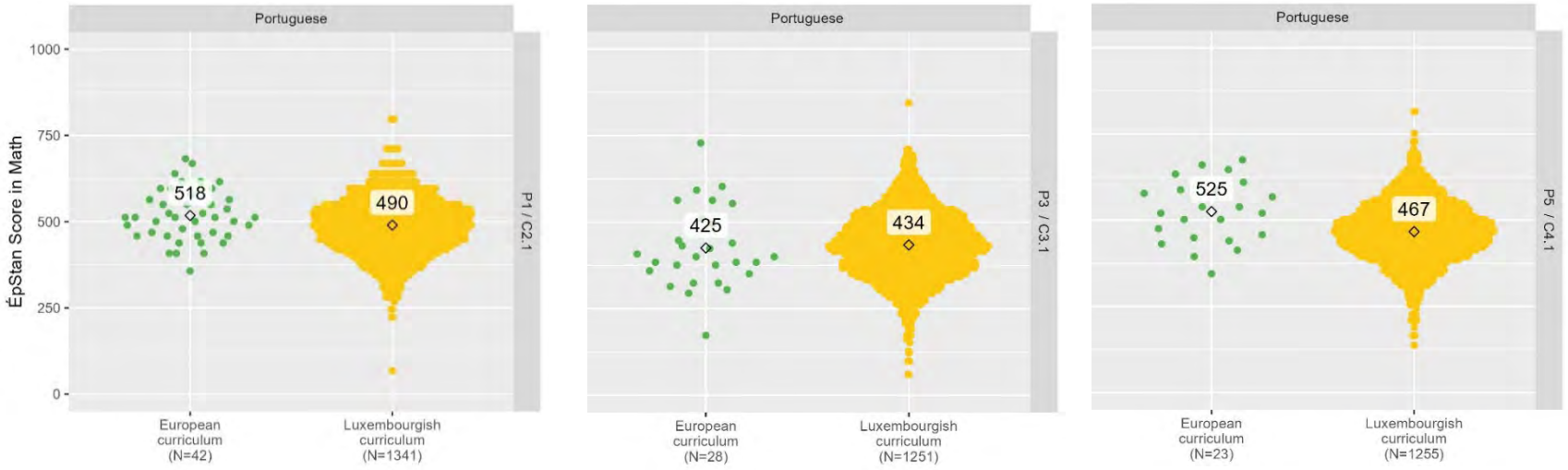
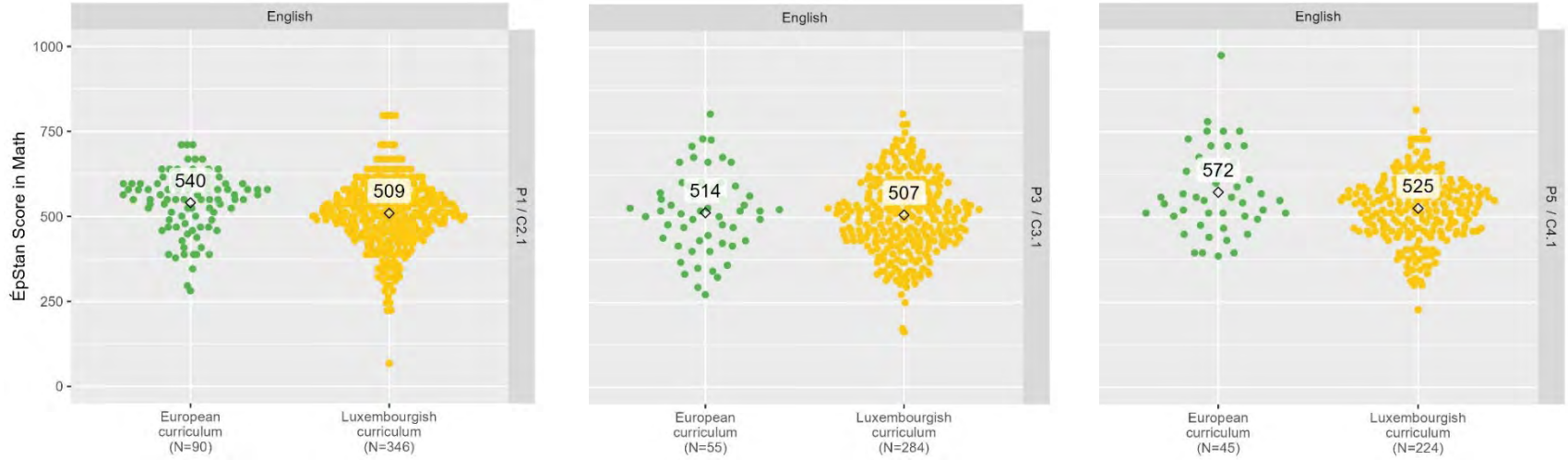


Figure IV.8 - Distribution of Achievement in Mathematics Separately by Curricula for English Speaking Students at Primary School Level (School Year 2022/23)



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4.4.2 MATHEMATICS ACHIEVEMENT AT SECONDARY SCHOOL LEVEL

With the ÉpStan being administered not only in primary school but also in G7 and G9 (schools that follow the Luxembourgish curriculum) and S1 and S3 (EPS), potential achievement differences in mathematics between students attending schools following the Luxembourgish curriculum and students in EPS can be investigated at secondary school level as well. In secondary schools following the Luxembourgish curriculum, students are allocated to three school tracks based on their abilities. The *Enseignement secondaire classique* (ESC) prepares students for higher academic studies. Within the *Enseignement secondaire général,* the *Voie d'orientation* (ESG) prepares students either for professional life or further academic studies, and the *Voie de préparation* (ESG-VP) prepares students for joining the ESG or for starting a vocational training (Lenz & Heinz, 2018). Considering that previous national and international studies (e.g., Boehm et al., 2016; Keller et al., 2014) have identified that extensive differences in academic achievement exist between school tracks, the present chapter will report findings for secondary school students attending schools following the Luxembourgish curriculum separately by school tracks. In contrast, secondary school students attending EPS are represented as a single group because EPS follow the principle of allocating all students to one common track until the end of lower secondary education (for more details see *Chapter I*). This difference needs to be taken into consideration when interpreting the findings at secondary school level (i.e., comparison of ability-based school tracks to a common school track in EPS), as it is likely to affect various aspects such as classroom management and teaching.

As described in *Chapter I* (see *Table I.3* for details), primary education in EPS spans from P1 to P5 and after five years of primary school, students are transitioning into secondary education. In S1, which marks the first year of lower secondary education in EPS, students with regular educational pathways (i.e., no grade repetition) should generally be 11 years of age. Considering that primary education in schools following the Luxembourgish curriculum spans over a duration of six years instead of five, students with regular educational pathways are generally 12 years old when transitioning into G7, which marks the first year of secondary education in schools following the Luxembourgish curriculum. As EPS students and students in schools following the Luxembourgish curriculum were assessed in their first year of secondary education, respectively (i.e., S1 or G7), it has to be taken into account that secondary school students in EPS might have one year of schooling less than their peers in schools following the Luxembourgish curriculum. *Figure IV.9*

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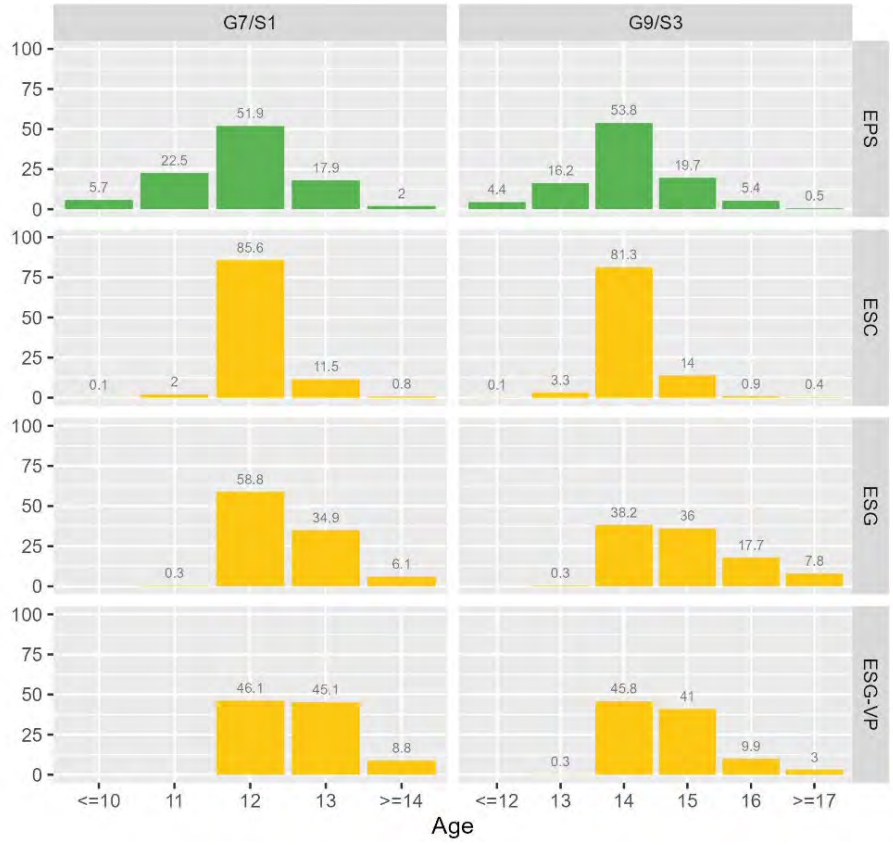
illustrates the age distribution of secondary school students in S1/G7 and S3/G9 separately by school curriculum for the ÉpStan 2022/23 cohort.

Figure IV.9 - Age Distribution of Secondary School Students in Percentages Separately by Curricula (School Year 2022/23)



Although students aged 11 and below can be identified in EPS in S1, *Figure IV.9* shows that approximately two thirds of the EPS student population are of a comparable age (i.e., 12 years and older) to students in schools following the Luxembourgish curriculum. This observation seems to indicate that the majority of EPS students at secondary school level have transitioned to the EPS system from primary schools following the Luxembourgish curriculum. This finding seems to be in line with the observed trajectories described in *Chapter III*.

Against the backdrop that two thirds of EPS students have only transitioned into the EPS system after having pursued primary education in school following the Luxembourgish curriculum and that the other third has had one year less of primary education than their peers in secondary schools following the Luxembourgish curriculum, the following results on achievement differences in secondary education should be interpreted with additional caution.

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Figure IV.10 - Distribution of Achievement in Mathematics Separately by Curricula at Secondary School Level (School Year 2022/23)

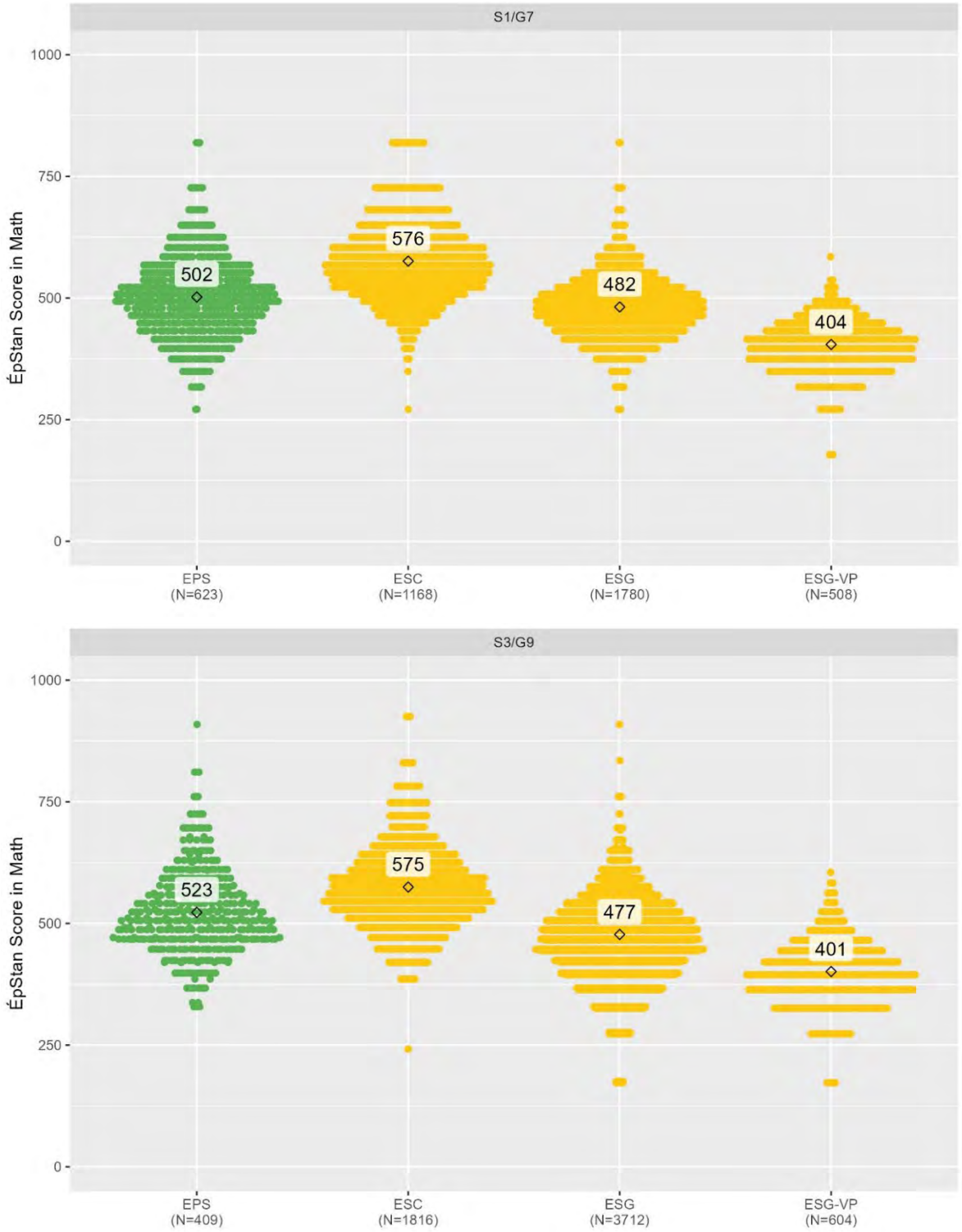

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Figure IV.10 shows the distribution of academic achievement in mathematics in secondary school separately by curriculum and school track for schools following the Luxembourgish curriculum. In line with the graphs presented in section *4.4.1* of the present chapter, *Figure IV.10* displays the ÉpStan score of each secondary school student by an individual dot and the density of all dots reflects the size of each group (i.e., the total *N* of students as indicated on the x-axis) for G7/S1 and G9/S3.

Looking at potential achievement differences in the subject of mathematics between different curricula and school tracks, secondary school students attending EPS in G7/S1 display higher mean values than their peers allocated to ESG or ESG-VP with a difference of 20 and 98 ÉpStan points, respectively. In comparison to ESC, EPS students display a mean value that is 74 ÉpStan points lower. Although EPS generally follow the common core approach (i.e., one single track), some EPS in Luxembourg also offer preparatory classes (*Voie de préparation,* see *Figure I.18* for details). In G7/S1, a total of *N* = 60 students attending such preparatory classes (EPS-VP) are included in the full EPS sample (*N* = 623 students). When excluding these students from the full sample, the mean ÉpStan score in mathematics increases from 502 to 511 for EPS. When looking at the 60 EPS-VP students separately, they display a mean ÉpStan score of 421 in mathematics, which remains above the mean for the ESG-VP (404) and below the mean for the ESG (482).

While following the same pattern in G9/S3, the mean differences in favor of students in EPS when compared to their peers in ESG (46 points) and ESG-VP (122 points) become more extensive. For ESC students in secondary schools that follow the Luxembourgish curriculum, the mean difference in comparison to EPS students can also be identified in G9/S3 (74 ÉpStan points higher), but is less extensive than in G7/S1 (52 ÉpStan points higher). With group differences ranging between 20 and 98 ÉpStan points in G7/S1 and between 46 and 122 ÉpStan points in G9/S3, the observed achievement differences in favor of secondary school students attending EPS go beyond the regularly observed fluctuations in the subject of mathematics and can thus be considered a first indication that EPS students are performing better than their peers allocated to the ESG and the ESG-VP in schools following the Luxembourgish curriculum. Their achievement in mathematics does however remain below the average performance of ESC students in both G7/S1 and G9/S3.

In line with the results for primary school students, these general patterns are now investigated relative to relevant background variables. Regarding **gender**, *Table IV.1* indicates that ≈ 46% of the students in EPS are female. Looking at schools following the Luxembourgish curriculum, female

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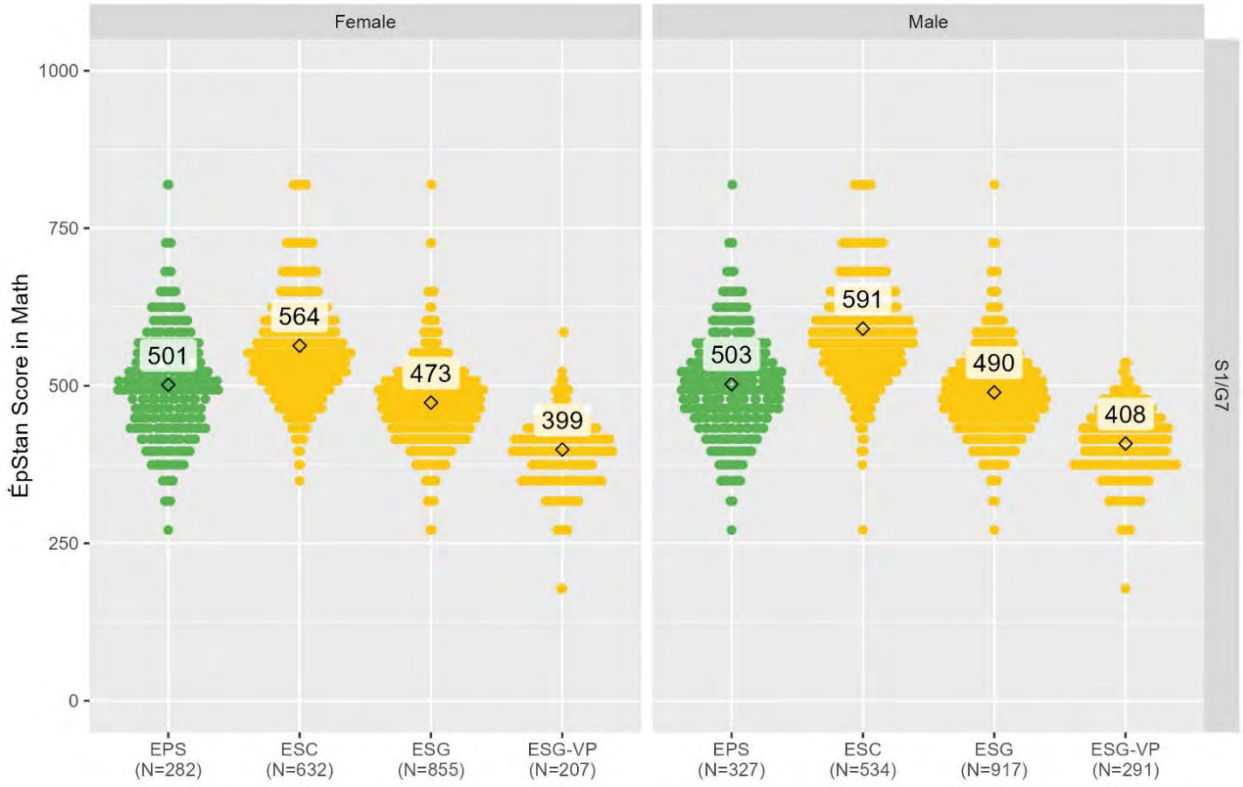
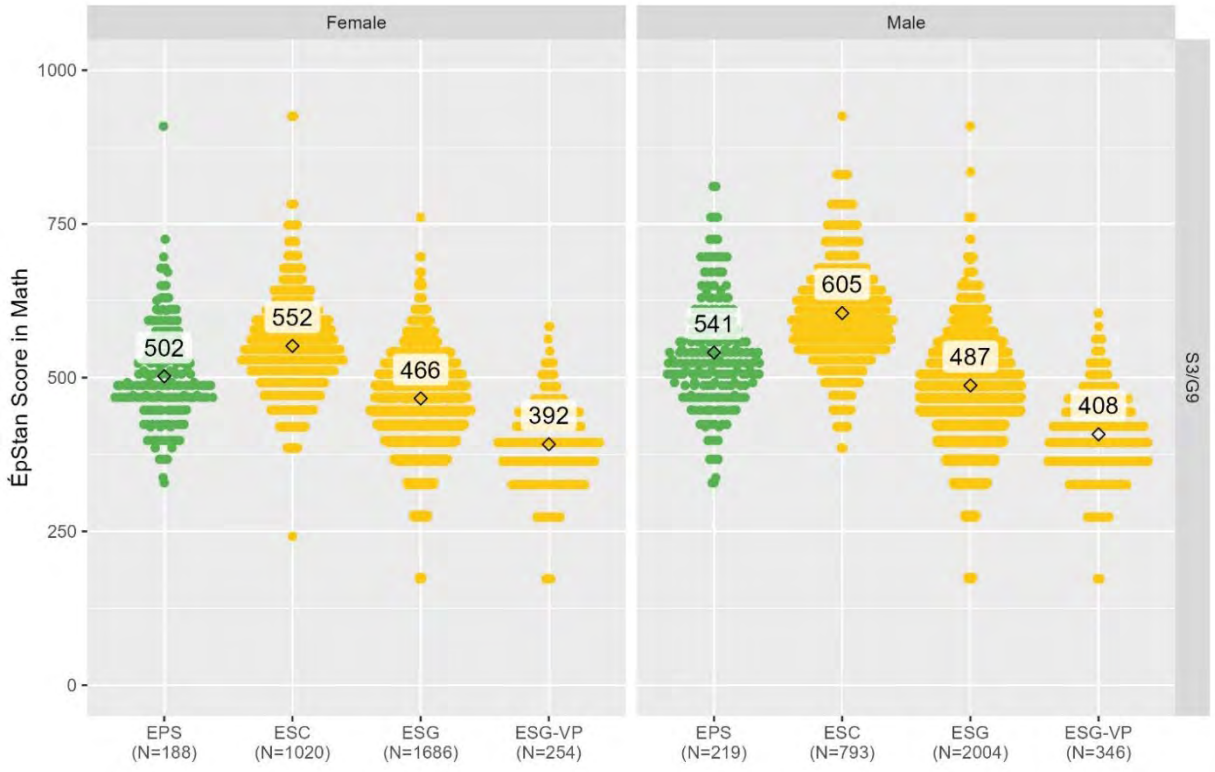
students account for a higher share of the student population in ESC (ranging from 46.2 to 54.1%) than in ESG-VP (≈ 41%). *Figure IV.11* shows the distribution of achievement in mathematics for G7/S1 and G9/S3 separately by curriculum/school track and gender.

With regard to potential achievement differences in mathematics, *Figure IV.11* indicates that EPS students show higher mean values than students attending ESG (e.g., between 13 and 54 ÉpStan points) and ESG-VP (e.g., between 95 and 133 ÉpStan points) across both secondary school grades and irrespective of their gender. In comparison, both male and female ESC students display higher mean values than their EPS peers (e.g., between 50 and 88 ÉpStan points). Following the same pattern as in *Figure IV.10*, differences in favor of EPS students become more extensive in G9/S3, whereas the difference in favor of ESC students seems less pronounced in older students.

Figure IV.11 - Distribution of Achievement in Mathematics Separately by Curricula and Gender at Secondary School Level (School Year 2022/23)





These results indicate that both male and female students in EPS are on average performing better in the subject of mathematics than their peers allocated to ESG or ESG-VP in schools following the Luxembourgish curriculum, while performing lower than ESC students. Whereas no gender differences can be observed between male and female EPS students in G7/S1, the pattern of male students outperforming female students can once again be found in G9/S3 in both systems.

Regarding **SES**, *Table IV.1* indicates that the student population in ESC is characterized by a higher SES (HISEI mean of ≈ 55) across all grades than the student population in ESG (HISEI mean of ≈ 40) and ESG-VP (HISEI mean of ≈ 34). With a HISEI mean of ≈ 52, the student population in EPS seems to be closest to students attending ESC. The higher HISEI means in these two groups translate, as at the primary school level, into relatively small groups of students characterized by a low SES in EPS (e.g., 43 students in G9/S3) and in ESC (e.g., 96 students in G7/S1). In addition, the number of students with a high SES is low in ESG-VP (e.g., 11 students in G7/S1, see *Figure IV.12*). In light of the small student groups, the results on academic achievement differences in mathematics based on SES should again be interpreted with caution.

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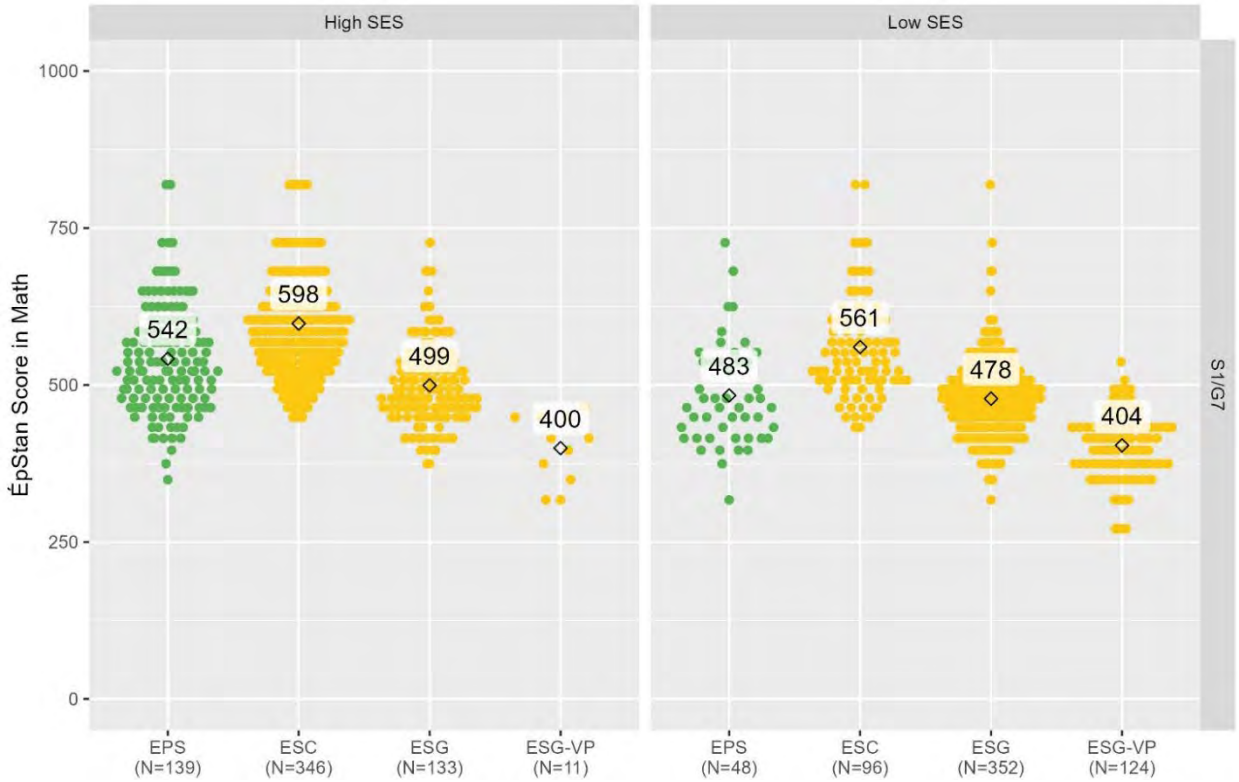
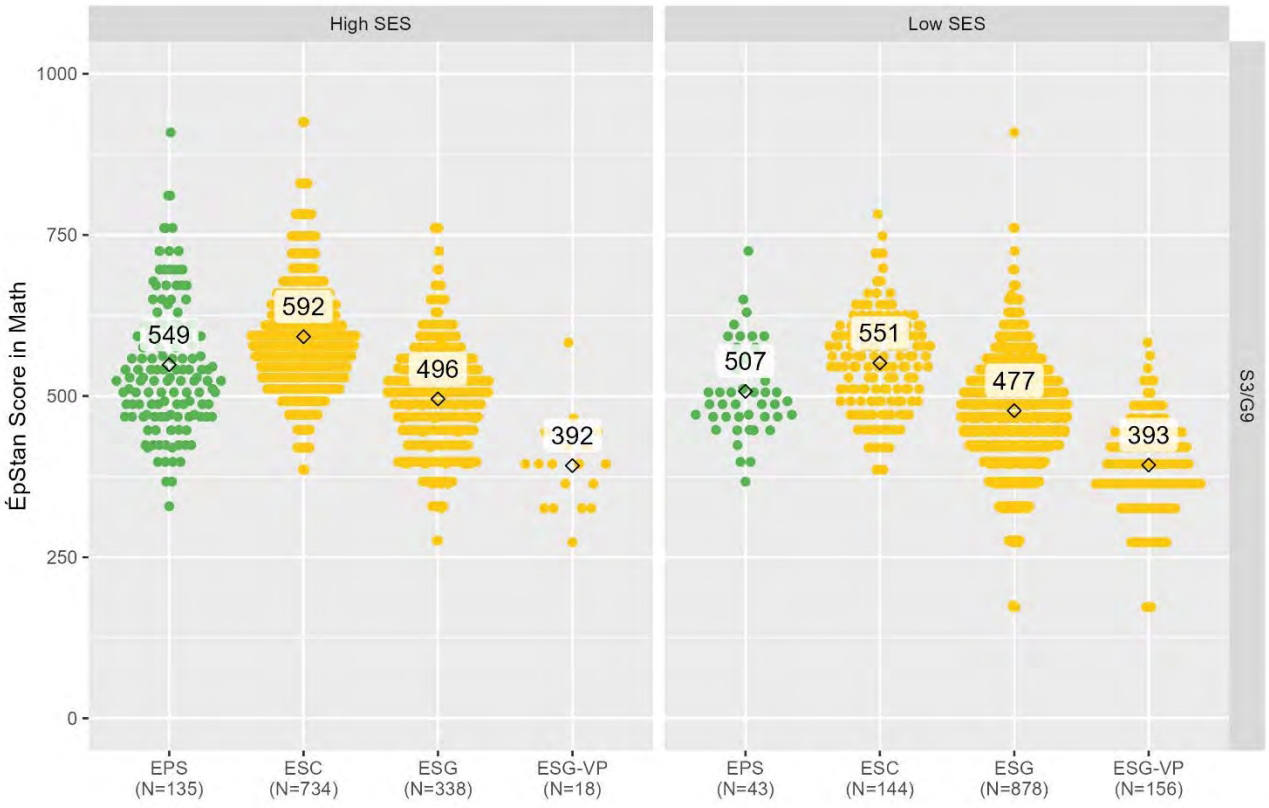
Figure IV.12 shows the distribution of academic achievement in mathematics for secondary school students separately by curriculum/school track and SES. Students attending EPS have lower mean values in mathematics than their peers attending ESC (e.g., between 43 and 78 ÉpStan points lower) and higher mean values than ESG (e.g., between 5 and 53 ÉpStan points higher) and ESG-VP students (e.g., between 79 and 157 ÉpStan points higher) across the two secondary school grades and this largely irrespective of their SES. In line with the findings for gender, differences in favor of students attending EPS become more extensive in G9/S3, whereas the group difference in favor of ESC students seems less pronounced in older students.

By going beyond regularly observed fluctuations of ± 10 ÉpStan points, the identified achievement differences in mathematics in favor of low SES students attending EPS can be understood as a first important indication that this student group is on average performing better than their peers in ESG and ESG-VP – school tracks to which students with a low SES are more frequently allocated to when attending schools following the Luxembourgish curriculum. This is most prominently visible in G9/S3. As visualized by the small number of individual points in *Figure IV.12*, it has, however, to be kept in mind that these findings are based on rather small *N*s.

Figure IV.12 - Distribution of Achievement in Mathematics Separately by Curricula and SES at Secondary School Level (School Year 2022/23)





Regarding **migration background**, *Table IV.1* indicates that the percentage of native students (i.e., students whose own country of birth and that of at least one of their parents is Luxembourg) is highest in ESC (ranging from 53.1 to 56.7%) and lowest in ESG-VP (≈ 20%). Ranging between 15.6% in G7/S1 and 21.0% in G9/S3, the share of native students in EPS seems closest to students attending ESG-VP in schools following the Luxembourgish curriculum. Similar to SES, this difference in student population translates into small groups of native students in EPS (e.g., 86 native students in G9/S3) and in ESG-VP (e.g., 115 native students in G9/S3, see *Figure IV.13*). In addition, it has to be presumed that students with a migration background in EPS are coming from other countries of origin (e.g., other non-EU countries) than their peers with a migration background in schools following the Luxembourgish curriculum (see also the relevant passage in the findings at the primary school level). Due to small student groups and potential differences in countries of origin between school curricula, the following results on achievement differences in the subject of mathematics based on migration background have to be interpreted with caution.

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Figure IV.13 - Distribution of Achievement in Mathematics Separately by Curricula and Migration Background at Secondary School Level (School Year 2022/23)

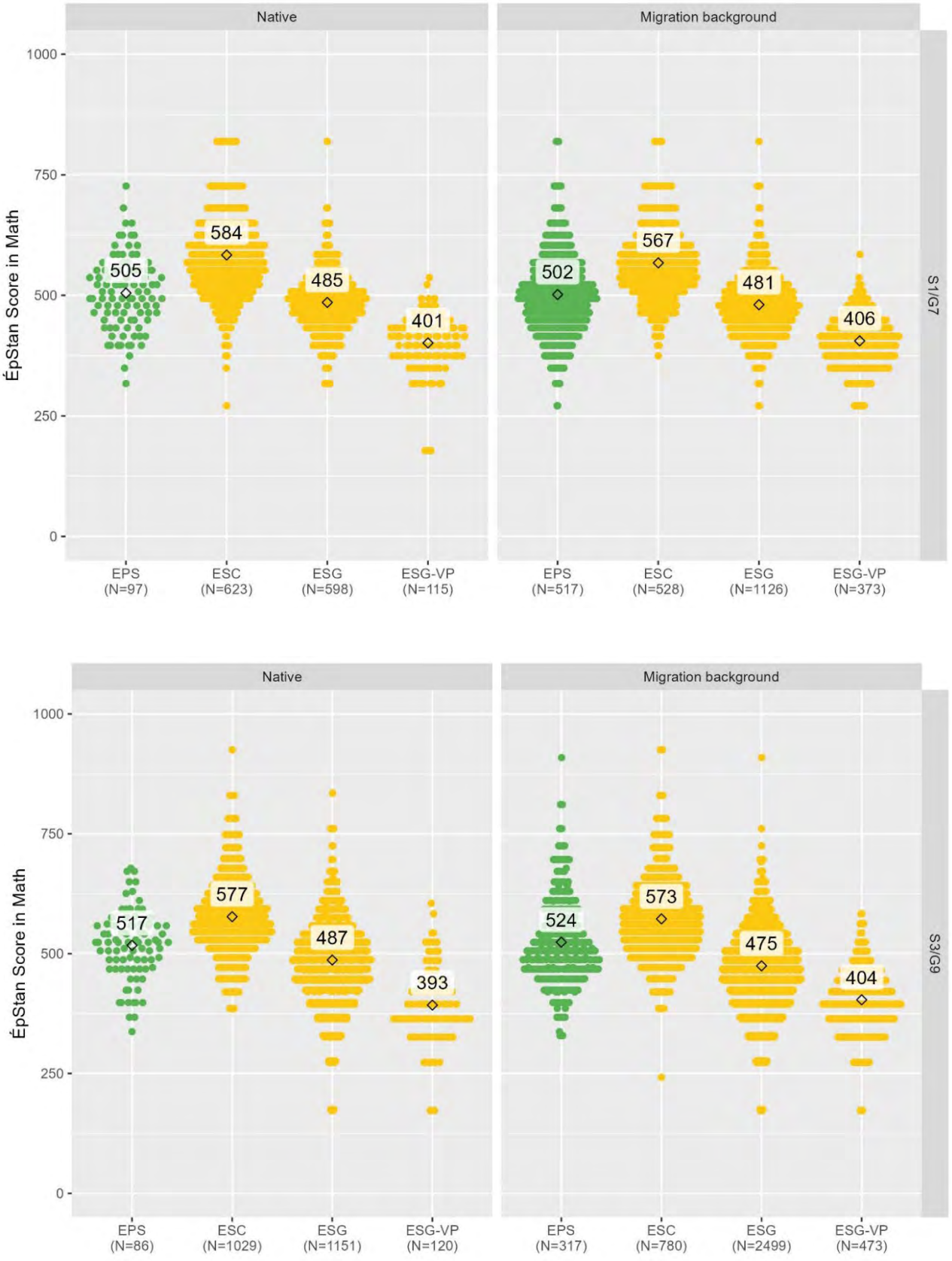

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Figure IV.13 illustrates the distribution of academic achievement in mathematics for secondary school students separately by curriculum/school track and migration background. In line with earlier findings on gender and SES, a consistent pattern can be seen among native students and students with a migration background attending EP. Both groups display lower mean values than their peers attending ESC (e.g., between 49 and 79 ÉpStan points lower), but higher mean values than their peers in ESG (e.g., between 20 and 49 ÉpStan points higher) and in ESG-VP (e.g., between 96 and 120 ÉpStan points higher) across both secondary school grades. In addition, the identified trend of less pronounced group differences in favor of ESC students when compared to EPS students and of more extensive group differences in favor of EPS students when compared to their peers in ESG and in ESG-VP in G9/S3 is also observable for migration background.

Looking at **language background** among secondary school students, *Table IV.1* illustrates that the share of students speaking Luxembourgish and/or German at home with at least one of their parents is highest in ESC (≈ 60%) and lowest in ESG-VP (≈ 22%). In EPS, the percentage of students speaking Luxembourgish and/or German at home is of 20.9% in G7/S1 and of 27.4% in G9/S3.

Figure IV.14 illustrates the distribution of achievement in mathematics for G7/S1 and G9/S3 separately by curriculum/school track for students speaking Luxembourgish and/or German at home. Following the same pattern that was observed for the previous comparisons at secondary school level, students with a Luxembourgish and/or German language background attending EPS show higher mean values than peers with the same language background attending ESG (between 25 and 36 ÉpStan points higher) and ESG-VP (between 109 and 122 ÉpStan points higher), while staying below the mean values of ESC students (between 55 and 74 ÉpStan points lower).

Regarding French, *Table IV.1* shows that ≈ 35% of secondary school students in EPS are speaking French at home. In schools following the Luxembourgish curriculum, the share of students with a French language background is lower in each track ranging from ≈ 11% in ESG-VP to ≈ 22% in ESC. These observed differences in the characteristics of the student population result in relatively small *N*s of French speaking students in ESG-VP (e.g., 54 students in G7/S1).

As can be seen in *Figure IV.15*, findings for students with a French language background follow the same pattern previously observed for students speaking Luxembourgish and/or German at home. EPS students display lower mean values than their peers attending ESC (between 53 and 73 ÉpStan points lower) and higher mean values than their peers in ESG (between 18 and 52 ÉpStan points higher) and in ESG-VP (between 96 and 128 ÉpStan points higher) across both secondary school grades.

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Figure IV.14 - Distribution of Achievement in Mathematics Separately by Curricula for Luxembourgish/German Speaking Students at Secondary School Level (School Year 2022/23)

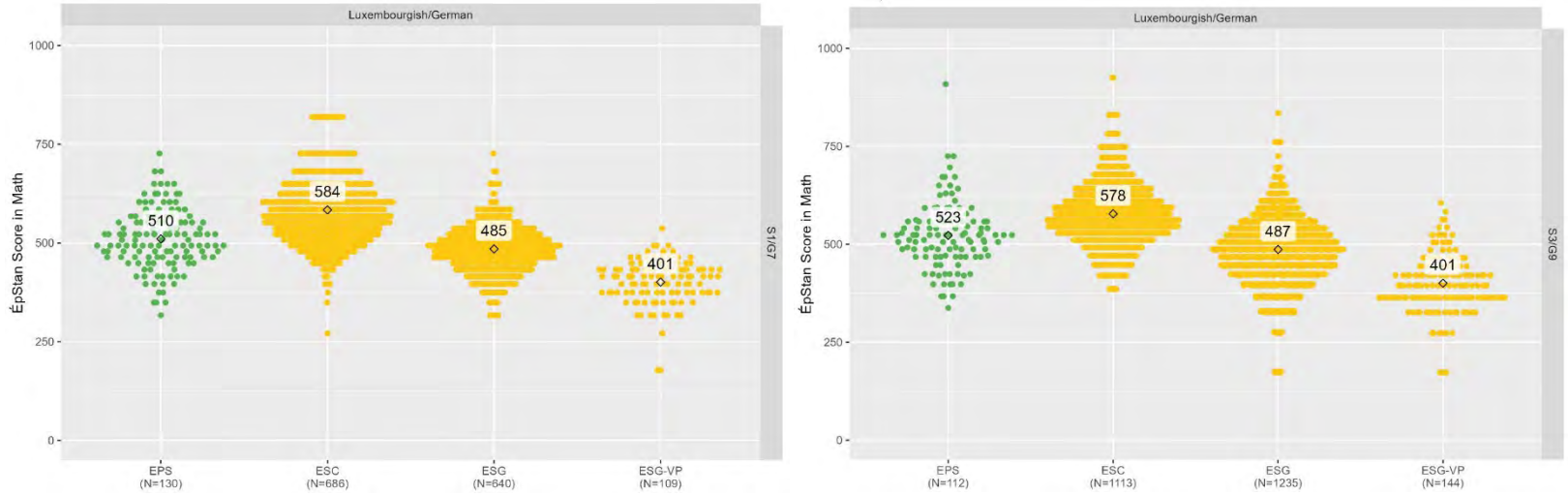
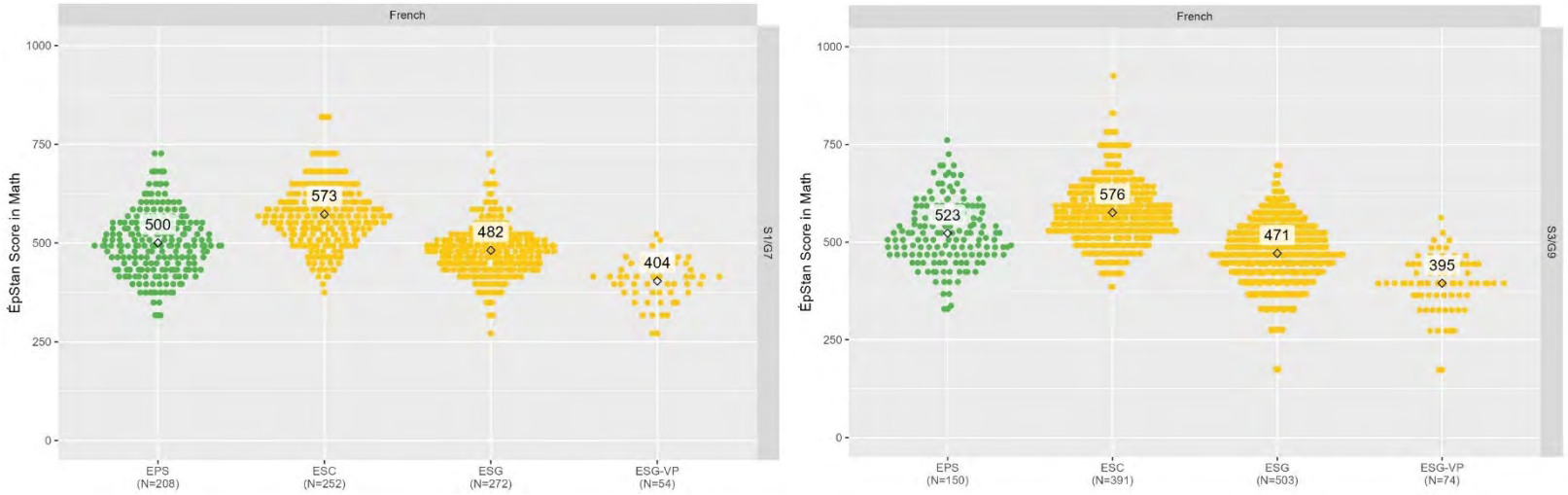


Figure IV.15 - Distribution of Achievement in Mathematics Separately by Curricula for French Speaking Students at Secondary School Level (School Year 2022/23)



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Looking at secondary school students that speak Portuguese at home with at least one of their parents, *Table IV.1* shows that ≈ 19% of the students in EPS have a Portuguese language background. In schools following the Luxembourgish curriculum, the share of Portuguese speaking students is highest in ESG-VP (≈ 44%) and lowest in ESC (≈ 11%).

Figure IV.16 illustrates the distribution of achievement in mathematics for secondary school students separately by curriculum for Portuguese speaking students. While a consistent pattern has been observed thus far for all other student background variables - EPS students having higher mean values than their peers in ESG and ESG-VP - this pattern has not been observed for Portuguese speaking students in G7/S1. With ESG students speaking Portuguese at home displaying a mean value that is 8 ÉpStan points higher than the mean value of their peers in EPS, and thus below regularly observed fluctuations of ± 10 ÉpStan points, it appears that Portuguese speaking students in EPS do not differ considerably from their peers in ESG.

In G9/S3 however, the pattern that has been observed in all other group comparisons at the secondary school level can once again be found for Portuguese speaking students in EPS. They display lower mean values than their peers in ESC (53 ÉpStan points lower) and higher mean values than those in ESG (28 ÉpStan points higher) and ESG-VP (98 ÉpStan points higher), which indicates that students with a Portuguese language background attending EPS are on average performing better in the subject of mathematics than their peers allocated to the ESG or ESG-VP, while staying below the performance of ESC students.

For secondary school students speaking English at home with at least one of their parents, *Table IV.1* indicates that 12% of the student population in EPS have an English language background. With percentages ranging from 3.0% in ESC to 1.5% in ESG-VP, the share of students speaking English at home is considerably smaller in schools following the Luxembourgish curriculum, which in turn results in very small *N*s of English speaking students for all school tracks (e.g., 9 students in ESG-VP in G9/S3, see *Figure IV.17*). Thus, the following findings should be interpreted with caution.

Figure IV.17 illustrates the distribution of achievement in mathematics for G7/S1 and G9/S3 separately by curriculum/school track for students speaking English at home. In line with the findings for students speaking Portuguese at home, the observed pattern was not consistent across the two secondary school grades. With a difference of 1 ÉpStan point between English speaking students in EPS and their peers with an English language background in ESG, it appears that students speaking English at home do not differ from their peers in ESG in G7/S1 when attending EPS. In G9/S3, English speaking students display lower mean values than students in ESC (64 ÉpStan points) and higher mean values than their peers in ESG (24 ÉpStan points) and ESG-VP (102 ÉpStan points).

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Figure IV.16 - Distribution of Achievement in Mathematics Separately by Curricula for Portuguese Speaking Students at Secondary School Level (School Year 2022/23)

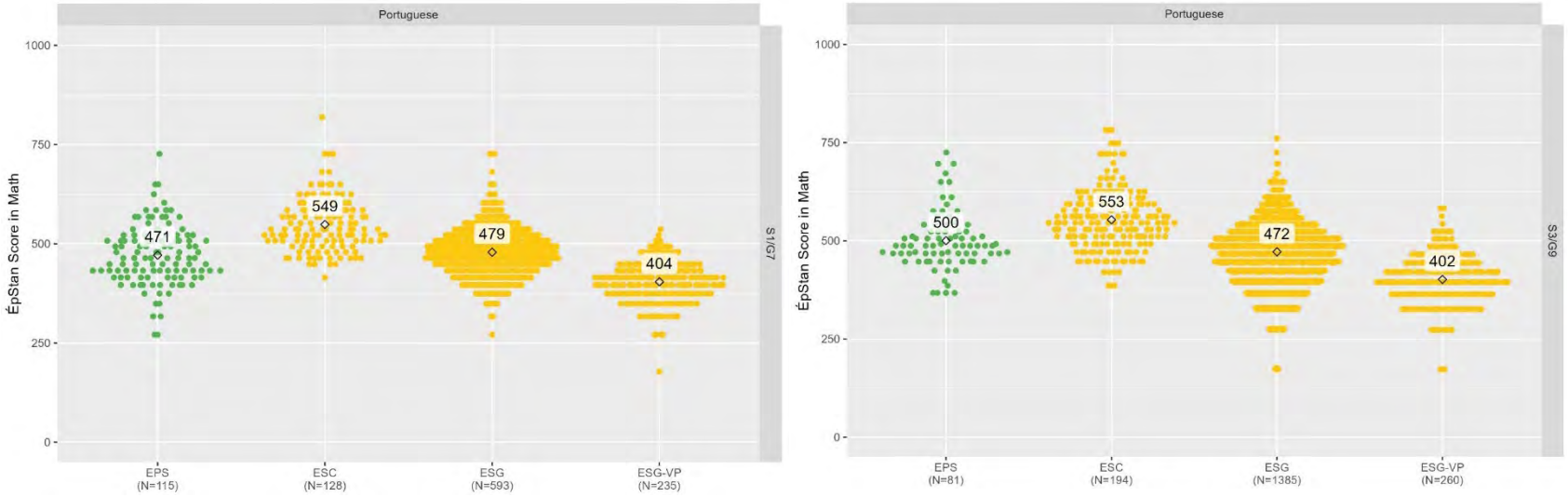
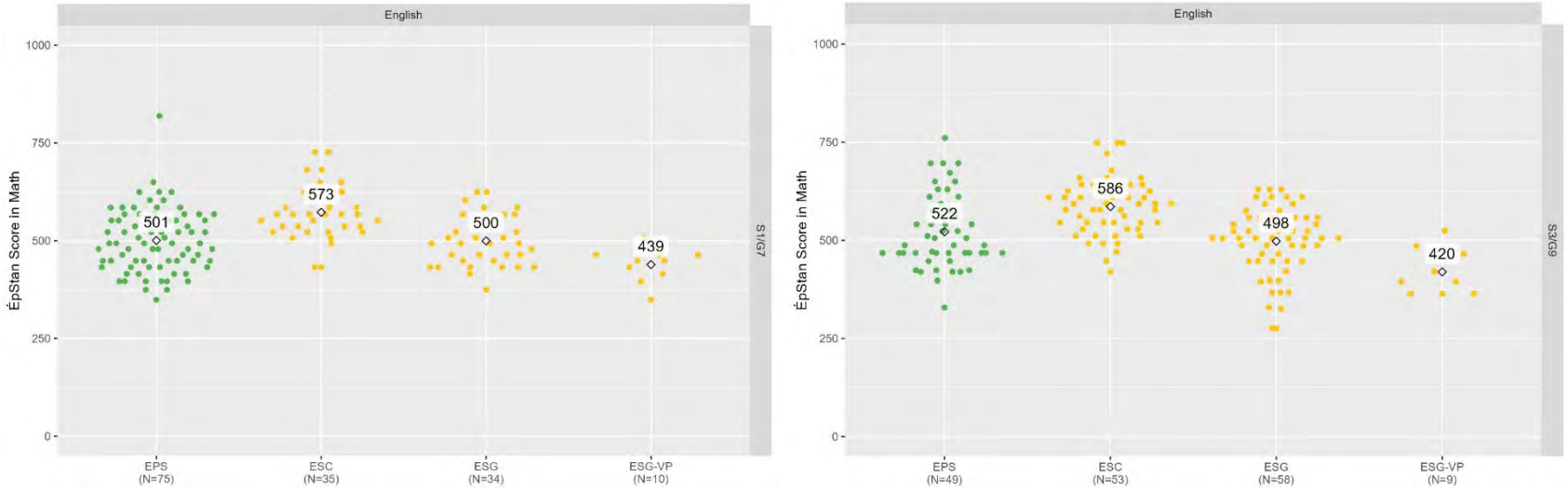


Figure IV.17 - Distribution of Achievement in Mathematics Separately by Curricula for English Speaking Students at Secondary School Level (School Year 2022/23)



4.5 ADDITIONAL ANALYSES ON ACADEMIC MOTIVATION

Schooling is not only about the acquisition of academic skills. Schools are also places where children and adolescents should feel safe and cared for, and where they can develop a positive attitude towards themselves as well as towards learning and personal development more generally. Hence, schools provide a critical environment in supporting students to develop a sense of control and of purpose in their lives, enabling them to develop high future aspirations and thus, preparing them for a culture of lifelong learning (Eccles & Wigfield, 2020; Ryan & Deci, 2020). There is a strong consensus that academic motivation and academic achievement go hand in hand (see Hornung et al., 2014; Wollschläger et al., 2022, for data concerning Luxembourg). Importantly, both higher academic achievement has been shown to depend on higher academic motivation, and inversely, higher achievement has been shown to predict higher subsequent motivation in students (Niepel et al., 2014; Schiefele et al., 2016; Wolff et al., 2021).

Therefore, three motivational variables, **interest** in mathematics, students' **academic self-concept** regarding mathematics (i.e., students' sense of their proficiency in mathematics), and students' **anxiety** regarding mathematics have also been considered in the comparison between students attending schools following the Luxembourgish curriculum and their peers in EPS (see Ugen et al., 2015, for a methodological background on these self-report measures within the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" - ÉpStan).

The analyses were carried out following the same logic as for achievement in mathematics. However, by and large, no coherent group differences emerged that would have justified a detailed description and discussion of these initial findings. That is, differences between EPS students and their peers attending schools following the Luxembourgish curriculum have either been small (e.g., < 0.25 for all comparisons at primary and secondary level for academic interest in mathematics, on a scale ranging from 1 to 4 with a standard deviation between 0.75 and 1.21 for all groups, which translates to small effect sizes d < .31 for all comparisons, see Cohen, 1988) and/or did not yield a coherent pattern across grades (e.g., a slightly higher value for academic self-concept in mathematics may have been observed for EPS in C3.1/P3, but this effect disappeared in C4.1/P5). This was the case for primary as well as for secondary education.

Similarly, when taking student background characteristics into account, there was no clear indication that typically disadvantaged groups in the schooling context (e.g., low SES students) differed in their interest or academic self-concept in mathematics when attending EPS compared to a school following the Luxembourgish curriculum.

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4.6 SUMMARY AND DISCUSSION OF RESULTS

By integrating EPS into the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" (ÉpStan), the full-cohort data including primary and secondary school students collected in autumn of the school year 2022/23 were analysed in an attempt to provide initial answers to the question whether the diversification of the school offer contributes to reducing previously observed inequalities in Luxembourg's education system. In the following, the results for primary school are summarized and discussed in light of important methodological limitations that make it difficult to draw a final conclusion. In a second step, the observations made at secondary school level will be put into context in regard to a number of more specific methodological challenges, which further limit a comparison of EPS and schools following the Luxembourgish curriculum at secondary school level.

4.6.1 SUMMARY AND DISCUSSION OF RESULTS AT PRIMARY SCHOOL LEVEL

With regard to students' academic achievement in mathematics at primary school level, students in EPS are on average performing better than students in schools following the Luxembourgish curriculum across all three grades that were assessed within the ÉpStan, and this is particularly so in higher grades (e.g., C4.1/P5). When looking at students with specific background variables, both male and female students in EPS display higher mean values in the subject of mathematics relative to their peers in schools following the Luxembourgish curriculum. Regarding gender differences within systems, male students were found to outperform their female peers both in EPS and in schools following the Luxembourgish curriculum. While high SES students seem to perform equally well in mathematics irrespective of their school's curriculum, these results offer a preliminary indication that students with a low SES attending EPS are on average showing higher achievement scores than their low SES peers in schools following the Luxembourgish curriculum. Looking at migration background, no consistent pattern was identified for native students across all three grades. For students with a migration background, however, higher mean values were identified for students attending EPS which can be understood as a first indication that EPS students with a migration background perform better in mathematics than their peers with a migration background in schools following the Luxembourgish curriculum. In light of the previously described observation that students having a migration background in EPS have a considerably higher SES than their peers with a migration background in schools following the Luxembourgish curriculum, it cannot however be concluded that students with a migration background, irrespective of type or origin, perform better at EPS. Regarding students' language background, French speaking students were identified as the only language group showing a consistent pattern across all three grades, with students attending EPS showing higher mean values in mathematics than their French speaking peers in schools following the Luxembourgish curriculum. Whereas Luxembourgish and/or German speaking students in EPS display lower mean values than their peers in schools following the Luxembourgish curriculum in both C2.1/P1 and C3.1/P3, the trend

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in C4/P5 is in favor of students attending EPS. Similarly, EPS students with a Portuguese language background are on average showing better achievement scores in mathematics than their Portuguese speaking peers in schools following the Luxembourgish curriculum in C2.1/P1 and C4.1/P5, although the difference in C3.1/P1 fails to go beyond regularly observed fluctuations. The same pattern has been observed for English speaking students. Taken together, the results found at primary school level might be considered as a first indication of achievement differences in mathematics that are in favor of EPS students when compared to students in schools following the Luxembourgish curriculum.

As explained in more detail in *Chapter I*, EPS have been established in order to encounter the growing diversity of the student population in Luxembourg, especially in light of their diverse linguistic backgrounds. Based on the assumption that the opportunity to choose a language section and thereby a main language of instruction (i.e., L1; German, French, or English) at EPS allows students to pursue their education in the language they speak at home or in a related language (e.g., another Romance language), the better linguistic fit offered by EPS could contribute to reducing educational inequalities that have been identified persistently in schools following the Luxembourgish curriculum (e.g., low SES students and Portuguese speaking students being at a disadvantage in the educational system; Boehm et al., 2016; Hadjar et al., 2018; Hornung et al., 2021; Sonnleitner et al., 2021).

The present chapter's descriptive data analysis does not allow the drawing of a final conclusion regarding which specific aspect of EPS (e.g., student population that differs considerably to the one of schools following the Luxembourgish curriculum, see *Table IV.1* for details, the assumed better linguistic fit offered by EPS) decisively contributes in explaining the observed achievement differences. However, the findings that low SES students, students with a migration background, or Portuguese speaking students attending EPS are on average performing better than their peers with the same background characteristics in schools following the Luxembourgish curriculum could potentially be in line with the presumption that a better linguistic fit in EPS contributes to reducing educational inequalities. The observation that achievement differences in mathematics appear to be more pronounced in C4.1/P5 than in the lower primary school grades, both in general and when comparing students based on their background characteristics (e.g., results for students based on their language background as illustrated in *Figures IV.5* to *IV.8*), seems especially noteworthy in this context. With regard to academic achievement in mathematics, research on schools following the Luxembourgish curriculum found achievement differences to be significantly increasing over time with, for example, a higher share of Portuguese speaking students (60 to 66%) failing to meet the expected achievement standards in G9 than students speaking an instruction language at home (i.e., Luxembourgish, German, or French; Sonnleitner et al., 2021). This observation holds against existing potential in the earlier grades (i.e., C3.1), where fewer (26 to 30%) Portuguese speaking students fail to achieve the

required standards in mathematics (Sonnleitner et al., 2021). Sonnleitner et al. (2021) argue that one possible explanation for this observation might be due to the fact that Portuguese speaking students are disadvantaged in the education system because the language of instruction in mathematics is different from their language spoken at home, both in primary (i.e., German) and secondary education (i.e., French), and that the multilingual nature of Luxembourg's education system presents a considerable challenge for a growing number of students. Against this backdrop, and the research finding that for primary school students in Luxembourg, achievement in mathematics is partially dependent on language skills in the language of instruction (Greisen et al., 2021); the results presented above suggesting that achievement differences in favor of EPS students are more prominent in later school years, can be potentially explained by the fact that mathematical instruction is becoming both increasingly complex and thereby more language-bound in higher grades. The expected better linguistic fit offered by EPS (i.e., a Portuguese speaking student in a French language section, in which the language of instruction is more closely related to the language spoken at home) might thus come more strongly into play in later primary school grades (i.e., C4.1/P5). As mentioned above, the assumed better linguistic fit offered by EPS is however only one potential explanation for the achievement differences observed in favor of EPS students when compared to their peers in schools following the Luxembourgish curriculum and should therefore not be considered as a final conclusion (see limitation 2 on potential other explanations for the present chapter's findings further below).

Although the findings at primary school level can be considered as a first tentative indication that students with a low SES or students speaking another language than Luxembourgish and/or German at home attending EPS perform on average better in mathematics than their respective peers in schools following the Luxembourgish curriculum, they have to be interpreted with caution due to a number of important methodological limitations, that are described in more detail in the following.

(1) Very small groups of students with specific background characteristics: As visualized in *Table IV.1*, the EPS student population differs considerably from the student population in schools following the Luxembourgish curriculum, which translates into very small groups of students characterized, for example, by a low SES (e.g., 14 students in C4.1/P5) or a specific language background (e.g., 23 students speaking Portuguese at home in C4.1/P5) in EPS. As illustrated by the example that excluding one Portuguese speaking student with a particularly low ÉpStan value from the sample changes the observed pattern in C3.1/P3 (see p. 120 for a detailed description), the results of the present chapter should be interpreted with caution, especially in the light of widespread distributions (e.g., distributions including outliers with particularly high or low ÉpStan scores). In addition to limiting the interpretation of the presented results, the small *N*s in EPS did not allow to investigate students based on the language section they attend or on a combination of background variables that are disadvantageous in the context of schooling, although such students (e.g., low SES students speaking

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Portuguese at home) are particularly at risk to struggle in schools following the Luxembourgish curriculum.

(2) Current data analysis does not allow to identify one specific explanation for the observed results: Whereas the assumed better linguistic fit offered by EPS can be considered as a potential explanation for the achievement difference between students in EPS and their peers in schools following the Luxembourgish curriculum, it has to be noted that the linguistic fit has not been operationalised directly (e.g., via the means of a student questionnaire or via an experimental manipulation) in the scope of the ÉpStan. As indicated in *Table IV.1*, the student population in EPS is considerably different from the one in schools following the Luxemburgish curriculum, for example, the share of students with a low SES or with a specific language background (e.g., Portuguese). This different student population could be another explanation for the achievement differences observed in favor of EPS students that would be in line with research findings illustrating that a higher SES at school level relates to individual student achievement (e.g., Caldas & Bankston, 1997; Opdenakker & Damme, 2001; Sykes & Kuyper, 2013). In a study that investigated the effects of classroom composition on academic achievement, Hornstra et al. (2015) discussed that teachers might for example lower their instructional level in classes with a higher share of low SES students and that low SES students might generally be more sensitive to contextual effects of their classroom (e.g., class size, didactical approaches, instruction quality) than their high SES peers, which might in turn result in achievement differences. As it can be assumed that EPS and schools following the Luxembourgish curriculum differ from each other in several other characteristics of the learning environment , the better linguistic fit in EPS has to be considered as only one potential aspect that might contribute to the observed achievement differences, while other explanations cannot be ruled out. Further studies would be needed to identify which characteristics of the learning environment are contributing to the achievement differences in mathematics (e.g., via classroom observations or self-reported student and teacher questionnaires). In this context (see *4.5*), it is worth noting that students' mathematical self-concept, their interest in mathematics and their anxiety in mathematics did not show a coherent pattern that fits the pattern found for mathematics achievement, thereby suggesting that overall EPS and schools following the Luxembourgish curriculum cater to students' needs equally well.

(3) Analyses were not conducted separately by language section in EPS: In terms of a better linguistic fit as a potential explanation for the observed differences between EPS students and their peers in schools following the Luxemburgish curriculum (e.g., possibility to pursue their education in their native or a related language), it could be pointed out that French speaking EPS students were identified as the only language group performing consistently better than their French speaking peers in schools following Luxemburgish curriculum. Since administrative data from past cohorts indicates that the vast majority of French speaking students attend the French language section in EPS (i.e., 88.1% in the

school year 2021/22, see *Chapter I*), this finding seems to be in line with the previously introduced linguistic fit explanation. However, due to the small group sizes in EPS, an analysis done separately by language section, comparing for example, French speaking students that attend the French versus English language section, was not yet feasible, but should be investigated in future studies.

(4) Definition of language groups: For the present analysis, language groups have been defined based on the respective language students speak at home with at least one of their parents (see *4.3.2*). This approach made the analysis feasible but resulted in a rather high heterogeneity within the respective language groups. For example, both monolingual and bilingual students are confounded in each language group, which is a characteristic that has been found to be linked to achievement (Martini et al., 2021). Future research, based on larger group sizes, should therefore apply a more fine-grained analysis on such linguistic features, for example, by comparing bilingual and monolingual Portuguese speaking students attending EPS.

(5) ÉpStan achievement tasks were developed based on education standards of schools following the Luxembourgish curriculum: In light of the fact that all tasks presented in the ÉpStan were developed based on education standards defined by the Ministry of Education, Children and Youth for primary and secondary schools following the Luxembourgish curriculum (see *4.3.2* for details), it cannot be excluded that achievement in mathematics was underestimated for students in EPS. Although a theoretical comparison of the mathematics curricula implemented in the two school offers indicated that they seem to be comparable regarding domains (see *4.3.2* for details), a more in-depth analysis of the respective curricula would have to be done in future studies (e.g., specific skills expected to be acquired for each domain) to allow for a more reliable conclusion about the observed achievement differences in mathematics between EPS and schools following the Luxembourgish curriculum.

(6) Migration background having a potentially different meaning in EPS: Besides small student groups for some background characteristics in EPS, the findings indicating that students having a migration background perform better in mathematics when attending EPS than their peers with a migration background in schools following the Luxembourgish curriculum should be interpreted with particular caution. As illustrated in *Figure IV.11* in *Chapter I* for a student's nationality, students with a migration background attending EPS are likely to have other countries of origin (e.g., other non-EU countries) than their peers having a migration background in schools following the Luxembourgish curriculum (e.g., Portugal). Considering that students with a migration background potentially represent very different socioeconomic and sociocultural groups at EPS than in schools following the Luxembourgish curriculum, it cannot be concluded that students of all sorts of migration backgrounds perform better in mathematics when attending EPS.

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4.6.2 SUMMARY AND DISCUSSION OF RESULTS AT SECONDARY SCHOOL LEVEL

At secondary school level, EPS students are on average performing better than students allocated to ESG or ESG-VP, while showing lower mean values in mathematics than ESC students in both G7/S1 and G9/S3. This pattern was found irrespective of the student's gender, SES, and migration background. Whereas it also held true for Luxembourgish/German and French speaking students, Portuguese and English speaking students attending EPS did not differ considerably from ESG students in G7/S1 in their mathematics achievement. In G9/S3, the pattern observed for all other group comparisons could also be found for Portuguese and English speaking students allowing the tentative conclusion that EPS students appear to perform better in mathematics than ESG and ESG-VP students and less well than ESC students irrespective of student background characteristics. In line with findings at primary school level, differences in favor of EPS students when compared to their peers in ESG and ESG-VP become more extensive in higher grades (i.e., S3/G9), whereas the group differences in favor of ESC students compared to students in EPS appear to grow less extensive.

The academic achievement differences in mathematics in favor of students attending EPS relative to their peers in the ESG or ESG-VP in schools following the Luxembourgish curriculum appear to be in line with the presumption that the better linguistic fit in EPS contributes to reducing educational inequalities. Inequalities that have been identified for low SES students and/or students speaking Portuguese at home, student groups that are more likely to be allocated to ESG or ESG-VP when attending a school following the Luxembourgish curriculum (see *Table IV.1* for differences in the school tracks' student populations). In addition, the language of instruction used in the subject of mathematics changes from German at primary school level to French at secondary school level for schools following the Luxembourgish curriculum, while the language of instruction remains the same in EPS (i.e., language of the language section). Therefore, the observed achievement differences in favor of EPS students could also be explained by a consistency in the use of the instruction language that does not result in additional challenges related to the change taking place in secondary schools following the Luxembourgish curriculum. As described in more detail for the findings at primary school level, the suspected better linguistic fit offered by EPS should only be considered as one potential explanation for the achievement differences in favor of EPS students when compared to their ESG and ESG-VP peers in schools following the Luxembourgish curriculum.

The results at secondary school level should be interpreted with even higher caution than those at primary school level. In addition to all the limitations described for the primary school level (see *4.6.1* for details), a number of important methodological limitations that are specific to the comparison of EPS and schools following the Luxembourgish curriculum at secondary school level further limit the statistical reliability of the results as described in the following:

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(1) Students with heterogenous trajectories in EPS at secondary school level: As described in more detail in *4.4.2*, the secondary school population in EPS consists of students with different educational trajectories. Whereas about one third of the students in S1 are 11 years or slightly younger, two thirds of them are at least 12 years old. With this being an indication that the majority of secondary school students in EPS transitioned from primary schools that followed the Luxembourgish curriculum into S1 (see *Chapter III* for details), it can be concluded that secondary school students in EPS have heterogenous trajectories that make an interpretation of the results difficult. Considering that the ÉpStan are taking place in autumn of each school year, two thirds of the students are labelled as EPS students although they have entered the system very recently. In addition, the ÉpStan administered to students in S1 and G7 are aiming at assessing whether the expected education standards of the previous cycle (i.e., C4) have been acquired by the students. It thus seems questionable to interpret the observed academic achievement differences in G7/S1 in light of a potentially better linguistic fit in EPS due to the high share of students that have transitioned into S1 from primary schools following the Luxembourgish curriculum. In order to draw methodologically sound conclusions, the student population at secondary school level should ideally be split based on trajectories with students having pursued their whole education in EPS being of special interest. Regarding the small number of EPS students at this moment in time, such an analysis is however not yet feasible. In future studies, it should be taken into considering how long students have been attending schools of the respective offer in order to draw methodologically more sound conclusions. Given this very important restriction, results at secondary school level should be interpreted with high caution and considered as tentative upon which no implications should be deduced.

(2) Comparison of an ability-based tracked school system to the comprehensive school system in EPS: A further limitation that is specific to the secondary school level is the fact that the ability-based tracked school system of schools following the Luxembourgish curriculum was compared to the comprehensive school system offered by EPS, in which all students are attending a common track in lower secondary education irrespective of their academic abilities (see *4.5.2* and *Chapter I* for details). In light of findings from previous national and international studies (e.g., Boehm et al., 2016; Keller et al., 2014), that have identified extensive differences in academic achievement between school tracks, and the more general research finding that ability-based tracking relates to both student' academic achievement and their learning motivation (e.g., Guill et al., 2017; Hallinan, 2003; Ireson & Hallam, 2009), the findings at secondary school level should be interpreted with additional caution. Although the test versions are statistically comparable, the concept of early tracking (i.e., schools following the Luxembourgish curriculum) stands in opposition to an educational system with later tracking (i.e., EPS). Therefore the secondary school students in schools following the Luxembourgish curriculum are, within the respective track they have been allocated to, more homogenous in terms of academic performance when compared to EPS secondary school students. As the highest school

track in schools following the Luxembourgish curriculum (ESC) is composed of students with high academic abilities, it does not seem surprising that ESC students are on average performing better than EPS students attending a common track irrespective of their academic abilities. In future studies, it would be of interest to compare high to low performing students irrespective of the track they have been allocated to in order to generate a better understanding of differences between an ability-based tracked school system to a more comprehensive school system.

(3) Representativeness of G7 data for schools following the Luxembourgish curriculum: Considering that G7 has been integrated into the ÉpStan at a later point than the other school grades (i.e., in the school year 2018/19) and that the assessment is solely tablet-based in G7 whereas it is tablet- and computer-based in G9, only about half of all G7 students in Luxembourg currently participate in the ÉpStan, which results in the fact that the data set is not (yet) fully representative for students attending schools following the Luxembourgish curriculum. This is mirrored in the smaller number of G7 students (*N* = 3.528 split across the three school tracks) when compared to the total number of G9 students (*N* = 6.154 split across the three school tracks; see *Table IV.1*).

(4) Representativeness of S3 data for EPS: In contrast to the higher amount of G9 students participating in the ÉpStan when compared to G7 students in schools following the Luxembourgish curriculum, the opposite holds true for EPS students. Whereas *N* = 623 students from six EPS participated in the ÉpStan at grade level S1, *N* = 409 students from four EPS participated at grade level S3. Due to the recent establishment of some EPS, they have not yet fully implemented the higher secondary school grades in their structures, which is why S3 data for EPS is the only one that allows for tentative conclusions.

When taking all these limitations together, it has to be underlined that the results for the secondary school level presented in this chapter are to be considered as a very tentative. The first indication that secondary school students in EPS perform better than their ESG and ESG-VP peers and lower than their ESC peers needs an in-depth verification using more statistically robust data that will hopefully become available in the future (e.g., increasing number of students attending EPS from P1 to S3, higher school grades established in more EPS).

4.7 CONCLUSION AND OUTLOOK

Before presenting a very tentative conclusion, it has to be underlined that the present chapter's data analysis does not allow the drawing of a final evaluation on which aspect of EPS decisively contributes to explaining the observed achievement differences in mathematics in favor of EPS students. In light of the findings that students that are considered disadvantaged in the context of schooling (e.g., low SES students, students speaking a language other than Luxembourgish and/or German at home) attending EPS have better academic achievement scores in mathematics when compared to their respective peers in schools following the Luxembourgish curriculum, it can be tentatively suggested

that the establishment of EPS might contribute to reducing educational inequalities in Luxembourg's education system, which can potentially be explained by the better linguistic fit that EPS offer to an increasingly diverse student pupation (i.e., choice of language section).

Considering all the limitations surrounding the interpretation of the present chapter's results (see *4.6.1* and *4.6.2* for details), it should be noted, that a verification of these preliminary results using more statistically robust (e.g., bigger student groups) and complete (e.g., number of years spent in the respective system) data is needed. In addition, the continuous monitoring of EPS within the ÉpStan will allow a more in-depth analysis of potential academic achievement differences in the future (e.g., investigation of longitudinal data, propensity score matching of specific EPS students with comparable students in schools following the Luxembourgish curriculum, investigation of the achievement gap within school curricula as an indicator for inclusiveness). By aiming at operationalising the presumed better linguistic fit (e.g., via students and/or parent questionnaires), future research studies would furthermore allow the analysis of which characteristics of EPS best explain the observed achievement differences.

Should future studies prove that the presumed better linguistic fit contributes to reducing the existing educational inequalities, it would be advisable to encourage EPS to target disadvantaged student groups more directly to increase the visibility of their school offer among students who could benefit considerably from attending EPS. Currently they account for only a very small share of the EPS student population (e.g., 14 low SES students in P5, or 23 Portuguese speaking students in P5). Besides raising the target population's awareness towards EPS, increasing the linguistic offer within schools following the Luxembourgish curriculum could also contribute to reducing existing inequalities, especially when taking into consideration that the six established EPS can only accept a limited number of students (e.g., availability of places) and that they are further away for many students than schools following the Luxembourgish curriculum (e.g., higher travel distances, see *Table IV.6* in *Chapter I*). In this context, the recent pilot project that was introduced in four primary schools to give C2.1 students the possibility of learning to read and write in French (MENJE, 2022) is of particular interest and its scientific evaluation will allow for a understanding of whether broadening the linguistic offer in schools following the Luxembourgish curriculum can counter the educational inequalities that are assumed to result (at least partially) out of a curriculum, in which high language expectations present an important challenge for a growing number of students.

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REFERENCES

Agirdag, O., & Vanlaar, G. (2016). Does more exposure to the language of instruction lead to higher academic achievement? A cross-national examination. *International Journal of Bilingualism, 22*(1), 123–137. https://doi.org/10.1177/1367006916658711

Boehm, B., Ugen, S., Fischbach, A., Keller, U., & Lorphelin, D. (2016). Zusammenfassung der Ergebnisse in Luxemburg. In Ministry of Education, Children and Youth, SCRIPT & University of Luxembourg, LUCET (Eds.), *PISA 2015: Nationaler Bericht Luxemburg* (pp. 4–12). https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/secondaire/pisa-2015-de.pdf

Caldas, S. J., & Bankston, C. (1997). Effect of school population socioeconomic status on individual academic achievement. *The Journal of Educational Research, 90*(5), 269–277. https://doi.org/10.1080/00220671.1997.10544583

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (Second Edition). Lawrence Erlbaum Associates.

Duong, M. T., Badaly, D., Liu, F. F., Schwartz, D., & McCarty, C. A. (2016). Generational differences in academic achievement among immigrant youths: A meta-analytic review. *Review of Educational Research, 86*(1), 3–41. https://doi.org/10.3102/0034654315577680

Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural perspective on motivation. *Contemporary Educational Psychology, 61*. https://doi.org/10.1016/j.cedpsych.2020.101859

Eurydice (Ed.). (2022). *Luxembourg overview*. https://eurydice.eacea.ec.europa.eu/national-education-systems/luxembourg/overview

Fischbach, A., Colling, J., Levy, J., Cate, I. M. P., Rosa, C., Krämer, C., Keller, U., Gamo, S., Hornung, C., Sonnleitner, P., Ugen, S., Esch, P., & Wollschläger, R. (2021). Befunde aus dem nationalen Bildungsmonitoring ÉpStan vor dem Hintergrund der COVID-19-Pandemie. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 141–157). Luxembourg: LUCET & MENJE.

Fischbach, A., Ugen, S., & Martin, R. (2014). *ÉpStan Technical Report. University of Luxembourg*, LUCET. https://orbilu.uni.lu/bitstream/10993/15802/1/%c3%89pStan%20Technical%20Report.pdf

Fischbach, A., Ugen, S., & Martin, R. (2016). Bilanz nach zwei vollen Erhebungszyklen. In Ministry of Education, Children and Youth, SCRIPT & University of Luxembourg, LUCET (Eds.), *PISA 2015: Nationaler Bericht Luxemburg* (pp. 13–19). https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/secondaire/pisa-2015-de.pdf

Ganzeboom, H. B. G. (2010). *A new International Socio-Economic Index (ISEI) of occupational status for the International Standard Classification of Occupation 2008 (ISCO-08) constructed with data from the ISSP 2002–2007*. Annual Conference of the International Social Survey Programme, Lisbon. http://www.harryganzeboom.nl/Pdf/2010%20-%20Ganzeboom-ISEI08-ISSP-Lisbon-(paper).pdf

Ganzeboom, H. B. G., De Graaf, P. M., & Treiman, D. J. (1992). A standard international socio-economic index of occupational status. *Social Science Research, 21*(1), 1–56. https://doi.org/10.1016/0049-089X(92)90017-B

• • •

Greisen, M., Georges, C., Hornung, C., Sonnleitner, P., & Schiltz, C. (2021). Learning mathematics with shackles: How lower reading comprehension in the language of mathematics instruction accounts for lower mathematics achievement in speakers of different home languages. *Acta Psychologica, 221*. https://doi.org/10.1016/j.actpsy.2021.103456

Guill, K., Lüdtke, O., & Köller, O. (2017). Academic tracking is related to gains in students' intelligence over four years: Evidence from a propensity score matching study. *Learning and Instruction, 47*, 43–52. https://doi.org/10.1016/j.learninstruc.2016.10.001

Hadjar, A., Fischbach, A., & Backes, S. (2018). Bildungsungleichheiten im luxemburgischen Sekundarschulsystem aus zeitlicher Perspektive. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018* (pp. 58–82). Luxembourg: LUCET & MENJE.

Hallinan, M. T. (2003). Ability grouping and student learning. *Brookings Papers on Education Policy, 6*, 95–140.

Hornstra, L., Van Der Veen, I., Peetsma, T., & Volman, M. (2015). Does classroom composition make a difference: Effects on developments in motivation, sense of classroom belonging, and achievement in upper primary school. *School Effectiveness and School Improvement, 26*(2), 125–152. https://doi.org/10.1080/09243453.2014.887024

Hornung, C., Hoffmann, D., Lorphelin, D., Gamo, S., Ugen, S., Fischbach, A., & Martin, R. (2014). Allgemeine Befunde zum luxemburgischen Schulwesen. In R. Martin, S. Ugen, & A. Fischbach (Eds.), *Épreuves Standardisées - Bildungsmonitoring für Luxemburg: Nationaler Bericht 2011 | 2013* (pp. 23–34). http://www.men.public.lu/catalogue-publications/secondaire/statistiques-analyses/autres-themes/epreuves-standard-11-13/epstan.pdf

Hornung, C., Kaufmann, L. M., Ottenbacher, M., Weth, C., Wollschläger, R., Ugen, S., & Fischbach, A. (2023). *Early childhood education and care in Luxembourg. Attendance and associations with early learning performance*. LUCET. https://doi.org/10.48746/epstanalpha2023pr

Hornung, C., Wollschläger, R., Keller, U., Esch, P., Muller, C., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 1. und 3. Klasse: Negativer Trend in der Kompetenzentwicklung und kein Erfolg bei Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 44–55). Luxembourg: LUCET & MENJE.

Ireson, J., & Hallam, S. (2009). Academic self-concepts in adolescence: Relations with achievement and ability grouping in schools. *Learning and Instruction, 19*(3), 201–213. https://doi.org/10.1016/j.learninstruc.2008.04.001

Keller, U., Lorphelin, D., Muller, C., Fischbach, A., & Martin, R. (2014). Unterschiede zwischen Schulformen. In S. Ugen & A. Fischbach (Eds.), *Épreuves Standardisées - Bildungsmonitoring für Luxemburg: Nationaler Bericht 2011 | 2013* (pp. 59–72). https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/statistiques-globales/epreuves-standardisees.pdf

Kirsch, C. (2018). Mehrsprachige Bildung in der frühen Kindheit. Rahmenbedingungen und professionelle Praktiken. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018* (pp. 135–137). Luxembourg: LUCET & MENJE.

• • •

Klein, C., & Peltier, F. (2022). *La démographie luxembourgeoise en chiffres 2022*. Statec. https://statistiques.public.lu/dam-assets/catalogue-publications/en-chiffres/2022/demographie-en-chiffre-22.pdf

Lenz, T., Baumann, I. E., Ugen, S., & Fischbach, A. (2018). Bildungsverläufe, Mehrsprachigkeit und ein Ausblick auf die Zukunft. Der zweite Bildungsbericht für Luxemburg. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018*. (pp. 8–11). Luxembourg: LUCET & MENJE.

Lenz, T., & Heinz, A. (2018). Das Luxemburgische Schulsystem: Einblicke und Trends. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018* (pp. 23–34). Luxembourg: LUCET & MENJE.

Martin, R., Ugen, S., & Fischbach, A. (Eds.). (2015). *Épreuves Standardisées - Bildungsmonitoring für Luxemburg: Nationaler Bericht 2011|2013*. https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/statistiques-globales/epreuves-standardisees.pdf

Martini, S., Schiltz, C., Fischbach, A., & Ugen, S. (2021). Identifying math and reading difficulties of multilingual children: Effects of different cut-offs and reference groups. In A. Fritz, E. Gürsoy, & M. Herzog (Eds.), *Diversity Dimensions in Mathematics and Language Learning* (pp. 200–228). De Gruyter. https://doi.org/10.1515/9783110661941-011

MENFP (Ed.). (2008). *Mathématiques - Division inférieure de l'enseignement secondaire - Compétences disciplinaires attendues fin 6e et fin 4e avec compétences élargies pour l'accès aux sections B, C et D*. https://men.public.lu/fr/publications/enseignement-secondaire/apprentissages/mathematiques-division-inferieure-enseignement-secondaire.html

MENFP (Ed.). (2011). *Plan d'études. École fondamentale*. https://men.public.lu/fr/publications/courriers-education-nationale/numeros-speciaux/plan-etudes-ecoles-fondamentale.html

MENJE (Ed.). (2022). *EDI - Infomagazin fir Elteren*. https://men.public.lu/dam-assets/catalogue-publications/edi-infomagazin-fir-elteren/2022/web-edi-10.pdf

Muller, C., Reichert, M., Gamo, S., Hoffmann, D., Hornung, C., Sonnleitner, P., Wrobel, G., & Martin, R. (2014). Kompetenzunterschiede aufgrund des Schülerhintergrundes. In R. Martin, S. Ugen, & A. Fischbach (Eds.), *Épreuves Standardisées - Bildungsmonitoring für Luxemburg: Nationaler Bericht 2011|2013*(pp.35–55).http://www.men.public.lu/catalogue-publications/secondaire/statistiques-analyses/autres-themes/epreuves-standard-11-13/epstan.pdf

Niepel, C., Brunner, M., & Preckel, F. (2014). Achievement goals, academic self-concept, and school grades in mathematics: Longitudinal reciprocal relations in above average ability secondary school students. *Contemporary Educational Psychology, 39*(4), 301–313. https://doi.org/10.1016/j.cedpsych.2014.07.002

OECD (Ed.). (2018a). *Luxembourg - Country Note - PISA 2018 Results. Programme for International Student Assessment (PISA)*. https://www.oecd.org/pisa/publications/PISA2018_CNT_LUX.pdf

OECD. (2018b). *PISA for Development Assessment and Analytical Framework: Reading, Mathematics and Science*. https://doi.org/10.1787/9789264305274-en

Opdenakker, M.-C., & Damme, J. (2001). Relationship between school composition and characteristics of school process and their effect on mathematics achievement. *British Educational Research Journal, 27*(4), 407–432. https://doi.org/10.1080/01411920120071434

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Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology, 61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Schiefele, U., Stutz, F., & Schaffner, E. (2016). Longitudinal relations between reading motivation and reading comprehension in the early elementary grades. *Learning and Individual Differences, 51*, 49–58. https://doi.org/10.1016/j.lindif.2016.08.031

Schola Europaea (Ed.). (2019). *Mathematics Syllabus - S1- S3*. https://www.eursc.eu/Syllabuses/2019-01-D-47-en-2.pdf

Schola Europaea (Ed.). (2022). *Mathematics Syllabus - Primary Cycle P1-P5*. https://www.eursc.eu/Syllabuses/2022-01-D-48-en-2.pdf

Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75*(3), 417–453. https://doi.org/10.3102/00346543075003417

Sonnleitner, P., Krämer, C., Gamo, S., Reichert, M., Keller, U., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 3. und 9. Klasse: Schlechtere Ergebnisse und wirkungslose Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 109–115). Luxembourg: LUCET & MENJE.

Sykes, B., & Kuyper, H. (2013). School segregation and the secondary-school achievements of youth in the Netherlands. *Journal of Ethnic and Migration Studies, 39*(10), 1699–1716. https://doi.org/10.1080/1369183X.2013.833707

Voyer, D., & Voyer, S. D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin, 140*(4), 1174–1204. https://doi.org/10.1037/a0036620

Winkelmann, H., Heuvel-Panhuizen, M., & Robitzsch, A. (2008). Gender differences in the mathematics achievements of German primary school students: Results from a German large-scale study. *ZDM, 40*(4), 601–616. https://doi.org/10.1007/s11858-008-0124-x

Wolff, F., Sticca, F., Niepel, C., Götz, T., Van Damme, J., & Möller, J. (2021). The reciprocal 2I/E model: An investigation of mutual relations between achievement and self-concept levels and changes in the math and verbal domain across three countries. *Journal of Educational Psychology, 113*(8), 1529–1549. https://doi.org/10.1037/edu0000632

Wollschläger, R., Esch, P., Keller, U., Fischbach, A., & Pit-Ten Cate, I. (2022). Academic achievement and subjective well-being: A representative cross-sectional study. In A. Heinen, R. Samuel, C. Vögele, & H. Willems (Eds.), *Wohlbefinden und Gesundheit im Jugendalter: Theoretische Perspektiven, empirische Befunde und Praxisansätze* (pp. 191–214). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-35744-3

Zhu, Z. (2007). Gender differences in mathematical problem solving patterns: A review of literature. *International Education Journal, 8*(2), 187–203.

CONCLUSION AND IMPLICATIONS

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5. CONCLUSION AND IMPLICATIONS

Luxembourg is a highly diverse country in terms of the socioeconomic, sociocultural, and linguistic composition of its population and this diversity is reflected in the national education system with an increasing share of students speaking a language other than Luxembourgish and/or German at home, both at primary and secondary school level (see *Figure I.13* and *I.14* for details). Although this diversity is an asset, students speaking a language other than Luxembourgish and/or German at home (e.g., French, Portuguese) and/or students with a low socioeconomic status (SES) have repeatedly been identified to struggle academically in schools following the Luxembourgish curriculum (e.g., Boehm et al., 2016; Hadjar et al., 2018; Hornung et al., 2021; OECD, 2018a; Sonnleitner et al., 2021).

In order to deal more adequately with the increasing language diversity of the student population and to counter the educational inequalities that are assumed to result (at least partially) out of a curriculum, in which high language expectations present an important challenge for a growing number of students, the Luxembourgish government has broadened the educational offer by introducing European public schools (EPS) that follow the European curriculum (Eurydice, 2022) and public schools following other international curricula (i.e., UK-Style education, see *Chapter I* for details). In contrast to schools following the Luxembourgish curriculum, EPS offer their students the opportunity to select one main language of instruction (L1) among the available language sections (i.e., German, French, and English). In addition, students are choosing a first (L2) and a second additional language (L3), which are taught as foreign languages (see *Chapter I* for details). Due to this more flexible language offer, EPS might provide a learning environment that is more adapted to the diverse student population in Luxembourg, contributing in turn to the reduction of the identified inequalities.

By combining data from different sources (e.g., administrative student data, expert interviews, academic achievement scores) the present report provides preliminary descriptive results on the societal demand towards EPS, their attendance rate and student population (*Chapter I*), as well as on the perception of EPS by the school management (i.e., functioning, offer, challenges) and by parents of EPS students (i.e., satisfaction, uptake reasons; *Chapter II*). Based on longitudinal administrative student data, the educational trajectories (e.g., grade repetition rates) of EPS students were analysed (*Chapter III*). In addition, the recent integration of EPS into the Luxembourg School Monitoring Programme "*Épreuves Standardisées*" (ÉpStan) in autumn of the school year 2022/23 allowed for the analysis of full-cohort data among both primary and secondary school students in a first attempt to compare EPS students to their peers in schools following the Luxembourgish curriculum with regard to academic achievement in mathematics (*Chapter IV*).

In the following, the present report's key findings and potential explanations are discussed in light of important methodological limitations while deducing practical implications for the national education

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system and providing an outlook on future research that is needed to obtain a more encompassing understanding of EPS in Luxembourg.

5.1 SUMMARY OF THE PRESENT REPORT'S MAIN FINDINGS

The establishment of the first EPS (i.e., *École Internationale Differdange et Esch-sur-Alzette*) in 2016 marks an important change in Luxembourg's education system. By broadening the educational offer through the introduction of EPS, which provide a multicultural and multilingual education according to the European curriculum, students are given the opportunity to choose a main language of instruction among the available language section (i.e., German, French, and English; MENJE, 2020). In this context, *Chapter I* offers an overview of the development of EPS in Luxembourg, their main characteristics (e.g., organizational structure, instruction languages) as well as their students' demographics, by mainly relying on administrative student data. The following conclusions on the growth of EPS and on the composition of their student population can be drawn:

Since 2016, a total of six EPS have opened in different locations across Luxembourg (see *Figure I.22*) and the number of students attending EPS increased considerably at both primary (i.e., from 0.1% of the school population in the school year 2016/17 to 2.5% in 2021/22, see *Figure I.5*) and secondary school level (i.e., from 0.3% in 2016/17 to 5.2% in 2021/22, see *Figure I.6*). This indicates that there seems to be a **high demand** for EPS, which is in line with findings from *Chapter II* on the uptake of the EPS offer (for details see *2.3* on the societal demand towards EPS).

Chapter I further illustrates that EPS differ in their student composition (e.g., nationality, language primarily spoken at home, SES) when compared to schools following the Luxembourgish curriculum. While Portuguese students account for the highest share of non-Luxembourgish nationals in schools following the Luxembourgish curriculum at primary (i.e., 16.4%, see *Figure I.11*) and secondary school level (i.e., 20.5%, see *Figure I.12*) in the school year 2021/22, the majority of non-Luxembourgish student in EPS at primary school level is French (i.e., 19.5%) or of other non-EU nationalities (i.e., 29.2%). At secondary school level, the majority of non-Luxembourgish students in EPS is of French (i.e., 14.4%), Portuguese (i.e., 14.6%), or other non-EU nationalities (i.e., 25.3%), whereas the biggest group of non-Luxembourgish students in schools following the Luxembourgish curriculum is of Portuguese nationality (i.e., 20.5%). With regard to the language primarily spoken at home, EPS students primarily speak French at home and this both at primary (i.e., 34.2%, see *Figure I.13*) and secondary school level (i.e., 19.2%, see *Figure I.14*). In schools following the Luxembourgish curriculum, Luxembourgish/German and Portuguese are the languages primarily spoken at home (i.e., 40.2% and 27.3%, respectively) at secondary school level. Comparing the SES of EPS students to the SES of students in schools following the Luxembourgish curriculum, data from the ÉpStan show that the mean SES is higher at primary (i.e., 59.8) and secondary school level (i.e., 51.9) in EPS than in schools following the Luxembourgish curriculum (i.e., 50.1 and 44.5, see *Figure I.15*), a finding that also holds true when individually

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comparing each EPS to the average SES of schools following the Luxembourgish curriculum. Taken together this comparison of the student composition in EPS and in schools following the Luxembourgish curriculum indicates that the **EPS student population differs from the student population in schools following the Luxembourgish curriculum** (e.g., higher SES, French primarily spoken at home). In addition, low SES students and students speaking another language than Luxembourgish and/or German at home (i.e., Portuguese), students groups which have repeatedly been found to struggle academically in schools following the Luxembourgish curriculum (e.g., Boehm et al., 2016; Hornung et al., 2021; Sonnleitner et al., 2021), take up the offer of EPS less frequently than high SES students and students that are speaking French or English at home. This finding also aligns with results of *Chapter II* showing that Portuguese students are less likely to apply to EPS relative to their share of the general student population in Luxembourg than, for example, French students (for details see *Table II.3*).

Chapter II focuses on school management teams and parents as two important groups of actors that are directly affected by the implementation of EPS in Luxembourg, by combining different data sources and methods (e.g., semi-structured expert interviews, online parent questionnaire).

Looking at the perception of EPS by **school management teams** (i.e., characteristics, functioning), EPS are considered to provide a coherent school offer to their students that allows them smooth transitions (e.g., from primary to secondary education, common track in lower secondary school). One topic that was emphasized by all interviewees when reflecting on the EPS was the **multilingual education offering students the possibility to select one main language of instruction** and thereby allowing to adapt the school offer to the highly diverse linguistic profiles of students in Luxembourg. In this context, students struggling in schools following the Luxembourgish curriculum due to their language profiles are discussed by the school management teams as a student group that EPS should target. Whereas EPS are generally seen as an important educational offer for an increasingly (language) diverse student population, the school management teams identify Luxembourgish language teaching (i.e., quantity, quality), the development of a vocational offer and an **improvement of system knowledge among all actors included in the education system** (e.g., parents, teachers of EPS and of schools following the Luxembourgish curriculum, educational advisors and school psychologists) as aspects requiring further development. An improvement of the system knowledge might contribute to increase the uptake of the EPS offer in student groups that are currently less frequently attending EPS (e.g., low SES students, Portuguese speaking students).

Focusing on **parents** as a second important group directly affected by the implementation of EPS, *Chapter II* identifies the **extended linguistic offer as the main reason** why parents select EPS for their child (82%), followed by the costless nature of EPS (65%), and the international certification (60%). For those parents having perceived difficulties related to language requirements at a previous school, the majority reports that those difficulties were at least mostly resolved by the change of schools. The result that only a small share of parents (10%) indicates to have received information on EPS by teachers at

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their child's previous school seems to be in line with the perception of school management teams, **that the system knowledge among all the actors included in the education system needs to be considerably improved**. In general, the majority of parents perceive their child to be (moderately) happy (93.4%) and to do (very) well academically (77.8%) in EPS. Parents further report to be mostly satisfied with the EPS and this especially so with the linguistic offer (85%), whereas they would like to see an improvement of the communication between school and parents (15% were dissatisfied with this aspect).

By focusing on **tangible educational outcomes of students** at both primary and secondary school level (i.e., educational trajectories, academic achievement in mathematics), *Chapter III* and *Chapter IV* further broaden the knowledge generated on EPS in Luxembourg. With regard to students' **educational trajectories** (i.e., grade repetition rates), first findings from *Chapter III* using longitudinal administrative student data seem to indicate that the majority of EPS students (i.e., 82% in the school year 2020/21) that were registered in P5 (i.e., final year of primary education in EPS) transitioned towards secondary education within EPS instead of switching to another curriculum, a result which appears to align with the perception of **smooth transitions** between primary and secondary education offered by EPS (i.e., transition within one school) that was raised by school management teams (see *Chapter II* for details). With regard to the school population in S1 (i.e., first year of secondary education in EPS), *Chapter III* illustrates that the largest share of S1 students has transitioned into EPS from primary schools that followed the Luxembourgish curriculum, thereby completing one more year of primary education (C4.2) compared to their peers that have completed primary education in EPS. Looking at **grade repetition** in the school year 2021/22, delayed school trajectories seem to occur **less frequently** in EPS with the share of EPS students without delay being higher in both primary (i.e., 98% in P5, see *Figure III.2*) and secondary school (i.e., 89% in S5, see *Figure III.3*) when compared to primary (i.e., 78% in C4.1) and secondary school students (i.e., 48% in grade 11 for ESG students) in schools following the Luxembourgish curriculum. In light of the **methodological limitations** described in more detail in *Chapter III* (i.e., no separate analysis by language sections, small number of students in EPS, and this especially so in later schools years at both primary and secondary school level), results from *Chapter III* offer a first tentative indication of EPS students showing greater continuity (i.e., lower rates of grade repetition) than students in schools following the Luxembourgish curriculum.

Using encompassing full-cohort data from the ÉpStan collected in autumn of the school year 2022/23, *Chapter IV* focuses on understanding how EPS students compare to their peers in schools following the Luxembourgish curriculum in the subject of mathematics, a school subject for which a bigger overlap is presumed between the two school offers than for the language curricula (see *Chapter IV* for details). When looking at students' **academic achievement in mathematics** at primary school level, **EPS students perform on average better** than students in schools following the Luxembourgish curriculum, and especially so in later years (i.e., close to 40 ÉpStan points in C4.1/P5). In addition, results from

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Chapter IV offer a first tentative indication that **low SES students or students speaking a language other than Luxembourgish and/or German at home (i.e., French, Portuguese, English) in EPS demonstrate better academic achievement scores** in mathematics than their peers with the same background characteristics in schools following the Luxembourgish curriculum (see *Figures IV.3* and *IV.6*, for example). At secondary school level, EPS students are on average performing better than their peers in the *Enseignement secondaire général - voie d'orientation* (ESG) and the *Enseignement secondaire général - voie de préparation* (ESG-VP), while having lower mean values in mathematics than students in the *Enseignement secondaire classique* (ESC). As with *Chapter III*, results of *Chapter IV* are **preliminary** and have to be interpreted with caution due to **important methodological limitations** (e.g., very small number of EPS students with specific background characteristics, comparison of an ability-based tracked school system to the comprehensive school system in EPS, comparability of the language versions of the mathematics achievement tests not yet statistically controlled, for details see *Chapter IV*).

Taken together, the findings of the present report indicate that there is a high demand for EPS to accommodate all students opting to follow the European curriculum. It should be noted that the current student composition in EPS differs from the student population in schools following the Luxembourgish curriculum with low SES students and/or students speaking Portuguese at home taking up the offer of EPS less frequently than high SES students and/or students speaking another language at home (i.e., French, English). Both school management teams and parents report a rather positive perception of EPS, with the extended linguistic offer being the main reason why parents select EPS for their child. Regarding tangible educational outcomes, preliminary results offer a tentative indication of EPS students showing higher continuity (i.e., lower grade repetition rates) than their peers in school following the Luxembourgish curriculum. With regard to achievement in mathematics at primary school level, the present report indicates that students in EPS perform better than their peers in schools following the Luxembourgish curriculum. At secondary school level, EPS students perform better than their peers in ESG and in ESG-VP, while staying below the performance of ESC students (*Chapter IV*). In addition, low SES students and students speaking Portuguese at home display better achievement scores in EPS than their respective peers in schools following the Luxembourgish curriculum.

5.2 DISCUSSION AND IMPLICATIONS

Since 2016, a total of six EPS have been established across Luxembourg, with one of their main aims being to broaden the educational offer (i.e., various language sections) to deal more adequately with the increasing language diversity of the country's student population. In light of the high demand towards EPS and with the extended linguistic offer being the main reason why parents select EPS for their child, it seems that the newly introduced school offer is well received and might contribute to reduce educational inequalities, considering that EPS students seem to display smooth educational trajectories (i.e., lower grade repetition rates) and better achievement in mathematics than their peers

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in general at primary school level and than their peers in ESG and ESG-VP at secondary school level (see *Chapter IV*).

Although the present report's descriptive data analyses do not allow for the drawing of a final conclusion regarding which aspect of EPS (e.g., linguistic fit, structural differences, student population characteristics) most decisively contributes to explaining the observed differences in educational outcomes in favor of EPS students (i.e., smooth trajectories, better achievement in mathematics); the finding that low SES students and students speaking a language other than Luxembourgish and/or German at home (e.g., French, Portuguese) perform better in mathematics than their respective peers in schools following the Luxembourgish curriculum is a first promising finding that could be in line with the assumption that the **better linguistic fit** in EPS contributes to reducing educational inequalities. As discussed in more detail in *Chapter IV* (see *4.6*), the observation that achievement differences in mathematics in favor of EPS students seem more pronounced in C4.1/P5 than in lower primary school grades can potentially be explained by the fact that mathematics instruction becomes increasingly complex and thus more language-bound in higher school grades. The suspected better linguistic fit in EPS might therefore come more strongly into play in later primary school grades.

Another potential explanation could be due to **structural differences** that exist between EPS and schools following the Luxembourgish curriculum. In comparison to the vast majority of schools following the Luxembourgish curriculum, EPS provide **primary and secondary education within one institution**. As discussed in *Chapter II*, school management teams in EPS perceive this coherent offer to students as an important characteristic of EPS that allows well-prepared and smooth transitions. In addition, the six EPS established across Luxembourg are Accredited European Schools (AES). As described in more detail in *Chapter I*, all AES are linked to the European School system by the means of a so-called Accreditation Agreement. In order to get and maintain the AES status, EPS in Luxembourg have to meet different requirements for accreditation in the domains of curriculum implementation (Article 3), linguistic conditions (e.g., offered language sections, Article 4), pedagogical content (e.g., preparation for taking the European Baccalaureate examination, Article 5), and teacher qualification (e.g., pedagogical and language qualifications, Article 6, for details see Schola Europaea, 2019). With accreditation being granted for a maximum of three years (Schola Europaea, 2019), EPS in Luxembourg are subject to regular external evaluations, an aspect which has also been raised by school management teams as an important EPS characteristic (see *Chapter II* for details). In contrast to schools following the Luxembourgish curriculum, EPS thus undergo an **institutionalized quality assurance**, which might in turn relate to the observed differences in educational outcomes (i.e., smooth educational trajectories, better academic achievement in mathematics) between EPS students and those in schools following the Luxembourgish curriculum. Another structural difference between EPS and schools following the Luxembourgish curriculum is that EPS have greater **flexibility in their teacher recruitment**, which results in more freedom in hiring teacher profiles that fit the school's

respective needs (see *Chapter II* for more details). By recruiting teachers internationally, school management teams perceive the diversity of their EPS teacher backgrounds (e.g., culture, languages) to be very positive and to foster different perspectives and experiences within their school's educational community. Besides their main language of instruction (L1, see *Chapter I* for details), EPS students are required to learn a first (L2) and second additional language (L3) generally taught as foreign languages by teachers that are native speakers or must have a command of the language to be taught at the highest level (C2 following the *Common European Framework of Reference for Languages*; Schola Europaea, 2018). In the scope of the previously described institutionalized quality assurance, EPS teachers are furthermore undergoing a **statutory evaluation** every fourth year, which is conducted in line with the three defined categories of the AES Teaching Standards (e.g., Teaching and learning, Wider professional responsibilities, Professional conduct and qualities; Schola Europaea, 2015, 2023). As described for the institutionalized quality assurance, the greater flexibility in teacher recruitment and the statutory evaluation could be further structural differences between EPS and schools that follow the Luxembourgish curriculum, which might relate to the observed educational differences between EPS students and their peers in schools following the Luxembourgish curriculum.

Besides the presumed better linguistic fit and the structural differences that exist between EPS and schools following the Luxembourgish curriculum, the present report underlines at various occasions that the **student population in EPS differs from the student population in schools following the Luxembourgish curriculum**, and this has thus to be contemplated as another potential explanation for the observed differences in educational outcomes in favor of EPS students (i.e., smooth educational trajectories, better achievement in mathematics). As discussed in more detail in *Chapter IV* (see *4.6*), the composition of the schools' student population, which is likely to be reflected at the classroom level (e.g., low share of low SES students or of Portuguese speaking students in EPS classrooms), has repeatedly been identified to be related to individual student achievement (Caldas & Bankston, 1997; Opdenakker & Damme, 2001; Sykes & Kuyper, 2013). In a study that investigates the effects of classroom composition on achievement, Hornstra et al. (2015) discuss, for example, that teachers might lower their instructional level in classes with a high share of low SES students and that low SES students might generally be more sensitive to contextual effects of their classroom (e.g., class size, didactical approaches, instruction quality) than their high SES peers, which might result in achievement differences.

The observation that low SES students and Portuguese speaking students take up the EPS offer considerably less frequently than their high SES peers and French or English speaking students could potentially result out of **three main hurdles** that will be discussed in more detail in the following.

(1) Application of selection criteria in light of a high demand towards EPS: As illustrated in *Chapter II* by the means of pre-registration data for the school year 2022/23, a total of 3.031 students had filed a demand for admission in one (or multiple) of the six EPS in Luxembourg, but only 1.529 new students

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had been accepted. Considering that the demand towards EPS is surpassing the number of available places, EPS have to decide which students to accept within their institutions based on certain selection criteria. In this context, the school management teams (see *Chapter II* for details) have discussed residence-related (i.e., students living closer to the EPS), family-related (i.e., having siblings already attending EPS), and student-related selection criteria (i.e., language proficiency, academic profiles) that are taken into consideration when deciding which students to accept in EPS. With the student-related selection criteria being the one most frequently mentioned by school management teams, it stands to reasons whether a selection based on the profiles of prospective students (e.g., language proficiency, realistic possibility to successfully pursue an academic track) could constitute a structural hurdle for specific student groups (e.g., low SES students, or students speaking a language other than Luxembourgish and/or German at home), which results in a less frequent acceptance in EPS. Although the application of selection criteria could potentially explain why student groups with specific background characteristics are less frequently attending EPS, the finding that students of Portuguese nationality do not only attend but also apply less frequently to EPS relative to their share in Luxembourg's general student population seems to indicate that other hurdles contribute to the observation that the student population in EPS differs to the student population in schools following the Luxembourgish curriculum.

(2) System knowledge regarding the characteristics of Luxembourg's education system: In order to be able to take an informed decision regarding their child's education, parents must be aware of the different school offers in Luxembourg and of their differences and similarities. With regard to schools following the Luxembourgish curriculum, it seems important to know that German is the language of literacy acquisition, that French is introduced as a second language and that there is a language switch in content subjects and in mathematics at secondary school level. The language offer in EPS is more flexible, with students being able to choose their main language of instruction (L1) among the available language sections (i.e., German, French, and English), two additional languages (L2 and L3) being taught as foreign languages and no language switch at secondary school level in the subject of mathematics. Another important difference between the two school offers, among others, is that secondary school students are allocated to three main school tracks based on their academic abilities in schools following the Luxembourgish curriculum, whereas students in EPS are attending one common track during early secondary education. Based on findings that low SES students and/or students speaking a language other than Luxembourgish and/or German at home are particularly at risk to struggle academically in schools following the Luxembourgish curriculum (e.g., Boehm et al., 2016; Hadjar et al., 2018; Hornung et al., 2021; OECD, 2018a; Sonnleitner et al., 2021), it would be especially important that parents of those students are aware of potential issues (e.g., high language expectations), which might hamper their child's educational pathway (e.g., grade repetition, lower academic achievement). Considering that EPS have only recently been established and that only a

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small share of parents (10%, see *Chapter II* for more details) indicate to have received information on EPS by teachers at their child's previous school, an additional hurdle might be that parents might not yet be aware of the EPS offer or that they might not consider the EPS offer to be directed at them due to how EPS might be perceived in the general population (e.g., expat schools).

(3) Potential organizational hurdles that hamper the uptake of the EPS offer: A further hurdle that might contribute to preventing parents from taking up the EPS offer is of a more organizational nature. Whereas the vast majority of primary school students in schools following the Luxembourgish curriculum is automatically allocated to the closest school within their municipality, EPS students frequently display higher travel distances than their peers in schools following the Luxembourgish curriculum (see *Table I.6* in *Chapter I*). Parents of disadvantaged students (e.g., low SES) could potentially face more difficulties in organizing their child's uptake of the EPS offer than those of advantaged students (e.g., reaching the geographical location of the EPS).

To **increase both the socioeconomic and sociocultural diversity** of the student population in EPS, all parents should be proactively and broadly informed about the characteristics, similarities and differences of the two school offers in order to be able to take informed decisions regarding their child's education. In this context, it would be important to foster an encompassing system knowledge among all actors included in the education system (e.g., teachers, parents, educational advisors, school psychologists). In light of the finding that only a small share of parents (10%, see *Chapter II* for more details) indicate having received information on EPS by teachers at their child's previous school, one approach that could be taken would be to inform teachers that EPS are complementary to schools following the Luxembourgish curriculum and that this offer could be especially beneficial to students that struggle in schools following the Luxembourgish curriculum and might therefore be shared with parents (e.g., in the scope of the *bilans intermédiaires*).

Besides raising the target population's awareness towards EPS and fostering the system knowledge of all the actors of the education system, school management teams stated that the integration of positive aspects from EPS into schools following the Luxembourgish curriculum could potentially be an important approach to further develop the education offer in Luxembourg (see *Chapter II* for details). In this context, a French literacy acquisition pilot project that was recently established in four primary schools aims at **extending the linguistic offer in schools following the Luxembourgish curriculum** by giving C2.1 students the possibility of learning to read and write in French (MENJE, 2022).

Should future studies be able to demonstrate the success of this pilot project and should the French literacy acquisition offer in turn be implemented at the local level, the **three previously described hurdles could potentially be overcome** (e.g., no selection criteria, teachers might be more aware of

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offers directly integrated into schools following the Luxembourgish curriculum than of the EPS offer that is complementary, schools located more closely to students' residence).

Against this backdrop and especially when taking into consideration that the demand is high and goes beyond the currently available places at EPS (see *Chapter I* and *II* for details), extending the linguistic offer in schools following the Luxembourgish curriculum might contribute to counter existing educational inequalities at a broader level (e.g., by giving more students the possibility to benefit from learning to read and write in their native or a related language). In addition to an extension of the linguistic offer, schools following the Luxembourgish curriculum could potentially also benefit from adopting other characteristics that might be related to the finding that students in EPS have better educational outcomes than their peers in schools following the Luxembourgish curriculum (e.g., primary and secondary education within one institution, institutionalized quality assurance, flexibility in teacher recruitment).

5.3 OUTLOOK

As described in more detail in the respective chapters, due to important methodological limitations, the present report only allows for the following tentative conclusion: EPS students show better educational outcomes than their peers in schools following the Luxembourgish curriculum (e.g., smooth educational trajectories, better academic achievement in mathematics, and this especially in primary school). By continuously integrating both the EPS and the classes participating in the French literacy acquisition pilot project into its well-established school monitoring tool, the ÉpStan will in the future allow for a more in-depth analysis of potential educational outcome differences between alternative school offers (i.e., EPS, French literacy acquisition pilot project) and schools following the Luxembourgish curriculum (e.g., investigation of longitudinal data sets, propensity score matching of students in EPS with comparable peers in schools following the Luxembourgish curriculum).

By operationalising the presumed better linguistic fit in EPS and in the pilot project (e.g., via student and parent questionnaires), future research studies will allow to explore which characteristics of the alternative school offers contribute in explaining observed differences in educational outcomes. In addition, including academic achievement measures in languages (e.g., German, French), as far as psychometrically possible (e.g., comparability of test versions and language curricula), in a future ÉpStan data collection would allow for the analysis of whether academic achievement differences in favor of EPS students also exist in other subjects. A better understanding of whether an extension of the linguistic offer both in EPS and in schools following the Luxembourgish curriculum helps to encounter the existing educational inequalities would provide the involved stakeholders with solid and reliable data for evidence-based policy making in the field of education. In turn, such results could be used for the creation of school offers, in which all students can make use of their full academic potential irrespective of their individual background characteristics (e.g., SES, language background).

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REFERENCES

Boehm, B., Ugen, S., Fischbach, A., Keller, U., & Lorphelin, D. (2016). Zusammenfassung der Ergebnisse in Luxemburg. In Ministry of Education, Children and Youth, SCRIPT & University of Luxembourg, LUCET (Eds.), *PISA 2015: Nationaler Bericht Luxemburg* (pp. 4–12). https://men.public.lu/dam-assets/catalogue-publications/statistiques-etudes/secondaire/pisa-2015-de.pdf

Caldas, S. J., & Bankston, C. (1997). Effect of school population socioeconomic status on individual academic achievement. *The Journal of Educational Research, 90*(5), 269–277. https://doi.org/10.1080/00220671.1997.10544583

Eurydice (Ed.). (2022). *Luxembourg overview*. https://eurydice.eacea.ec.europa.eu/national-education-systems/luxembourg/overview

Hadjar, A., Fischbach, A., & Backes, S. (2018). Bildungsungleichheiten im luxemburgischen Sekundarschulsystem aus zeitlicher Perspektive In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2018* (pp. 58–82). Luxembourg: LUCET & MENJE.

Hornstra, L., Van Der Veen, I., Peetsma, T., & Volman, M. (2015). Does classroom composition make a difference: Effects on developments in motivation, sense of classroom belonging, and achievement in upper primary school. *School Effectiveness and School Improvement, 26*(2), 125–152. https://doi.org/10.1080/09243453.2014.887024

Hornung, C., Wollschläger, R., Keller, U., Esch, P., Muller, C., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 1. und 3. Klasse: Negativer Trend in der Kompetenzentwicklung und kein Erfolg bei Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 44–55). Luxembourg: LUCET & MENJE.

MENJE (Ed.). (2020). *The Luxembourg Education System*. https://men.public.lu/dam-assets/catalogue-publications/divers/informations-generales/the-luxembourg-education-system-en.pdf

MENJE (Ed.). (2022). *EDI - Infomagazin fir Elteren*. https://men.public.lu/dam-assets/catalogue-publications/edi-infomagazin-fir-elteren/2022/web-edi-10.pdf

OECD (Ed.). (2018). *Luxembourg—Country Note - PISA 2018 Results. Programme for International Student Assessment (PISA)*. https://www.oecd.org/pisa/publications/PISA2018_CNT_LUX.pdf

Opdenakker, M.-C., & Damme, J. (2001). Relationship between school composition and characteristics of school process and their effect on mathematics achievement. *British Educational Research Journal, 27*(4), 407–432. https://doi.org/10.1080/01411920120071434

Schola Europaea (Ed.). (2015). *Quality teaching in the European Schools - Booklet*. https://gudee.eu/DOC2016/2015-09-D-3-en-2-Booklet.pdf

Schola Europaea (Ed.). (2018). *Control of the level of linguistic competence as part of the procedure for recruitment of non-native speaker teaching and educational support staff*. https://www.eursc.eu/BasicTexts/2018-01-D-65-en-3.pdf

Schola Europaea (Ed.). (2019). *Regulations on Accredited European Schools*. https://www.eursc.eu/Documents/2019-12-D-12-en-1.pdf

• • •

Schola Europaea (Ed.). (2023). *Evaluation of seconded and locally recruited teachers in the European schools*. https://www.eursc.eu/BasicTexts/2023-01-D-32-en-3.pdf

Sonnleitner, P., Krämer, C., Gamo, S., Reichert, M., Keller, U., & Fischbach, A. (2021). Neue längsschnittliche Befunde aus dem nationalen Bildungsmonitoring ÉpStan in der 3. und 9. Klasse: Schlechtere Ergebnisse und wirkungslose Klassenwiederholungen. In LUCET & SCRIPT (Eds.), *Nationaler Bildungsbericht Luxemburg 2021* (pp. 109–115). Luxembourg: LUCET & MENJE.

Sykes, B., & Kuyper, H. (2013). School segregation and the secondary-school achievements of youth in the Netherlands. *Journal of Ethnic and Migration Studies, 39*(10), 1699–1716. https://doi.org/10.1080/1369183X.2013.833707

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