

Benchmarking the International Arab Baccalaureate (IAB)

UK NARIC Benchmarking Report

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List of Acronyms

ERC	Educational Research Center
PSE	Profile Shaping Education
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
AO	Assessment Objective
IAB	International Arab Baccalaureate
KSA	Kingdom of Saudi Arabia
STEM	Science, Technology, Engineering and Mathematics Subjects

Executive Summary

Context

UK NARIC has been commissioned by the Educational Research Center (ERC) in Lebanon to undertake a benchmarking exercise evaluating the comparability of the International Arab Baccalaureate (IAB) in the context of the UK education system. The current benchmarking project leads on from an initial review undertaken in 2015 and a subsequent consultancy exercise and interim report completed in 2016. This project has been scheduled in conjunction with the final studies and examinations of the 2017 graduating cohort, following the introduction of a revised assessment format in the 2014/15 academic year¹.

The IAB is intended as an international qualification currently being delivered at select schools across Lebanon and Saudi Arabia. It has been developed by the ERC to be offered alongside national qualifications as a three-year programme at upper secondary level (Grades 10-12) for students studying the Science Stream. The IAB comprises six subjects: biology, chemistry, physics, mathematics, Arabic, French or English; and a cross-curricular project. The lessons in Lebanon are taught in both English and Arabic, which assists in promoting development of language skills, and the assessment is in English. In the Kingdom of Saudi Arabia, all lessons and assessments are conducted in Arabic, apart from English which is taught as a foreign language.

Methodology

The approach for benchmarking the IAB Diploma combines a review of the core components of the IAB Diploma, and an in-depth comparative analysis of these core components in relation to the UK GCE A and AS Levels, recognised upper secondary qualifications in the UK. The components include entry requirements, duration, structure and content, modes of learning and assessment, learning outcomes, and associated outcomes. Quality assurance policies and procedures are also considered.

The evaluation of the IAB Diploma overall draws on a subject-level analysis, which examines the sciences and maths programmes against the GCE AS/A Levels in terms of their aims, content depth and breadth, outcomes and assessment. English language is analysed in relation to GCSE in English as a Second Language. Informing the comparability of assessment, a sample of continuous assessments and the summative IAB comprehensive exams taken in Lebanon and Saudi Arabia are reviewed and considered in comparison to GCE AS/A Level assessments.

The benchmarking process has also been informed by two site visits to Lebanon: in 2015 to meet with teachers at IAB pioneer schools and administrators; and in 2017 to conduct further interviews with the IAB management team following the administration of the new comprehensive exam. IAB lessons were observed during both site visits at IAB pioneer schools in Lebanon.

¹ Grade 10 of the current cohort.

Key Findings

Observations on the IAB Diploma

In summary, the IAB Diploma can be considered to provide a balanced preparation across the sciences, mathematics and languages for higher education, combining subject specific knowledge and skills with promotion of transferrable and cross disciplinary skills. This encourages an understanding of the links between science, technology and the environment. Moreover, the cross-disciplinary project, a compulsory part of the IAB, provides a valuable opportunity to develop and enhance the personal and social skills of IAB students as well as personal initiative in solving a real-world problem.

The delivery and assessment of the IAB are underpinned by the well-developed Profile-Shaping Education philosophy which intends to support the development of life relevant skills and attitude as well as a global outlook, enhancing the programme's relevance to students, higher education and employers. The student-centred delivery at the IAB pioneer schools is observed to reflect closely with the main aims and ethos of the programme. For instance, delivery methods that include open-ended questions, discussion and debate, support not only the development of communication skills but also of critical and creative thinking skills.

UK Comparability of the IAB Diploma

The aims of the IAB Diploma are broadly comparable to those of the GCE A Levels, in that the overall intention is to provide students with the breadth and depth of study to prepare them for further study at higher education level and / or employment. The baccalaureate structure of the IAB Diploma includes six subjects, whereas the GCE A Levels are typically taken in three or four subject combinations. The broader structure of the IAB Diploma is reflective of its longer duration of three years while the GCE A Level programmes typically comprise two years of intensive study. The IAB is primarily intended for students taking the sciences stream in Lebanon and Saudi Arabia, while GCE A Levels are available for a broader range of subjects which can include humanities as well as science subjects and maths.

Whilst acknowledging the differences in volume and structure of the IAB subjects in relation to the GCE A Level counterparts, similarities in terms of the key skills developed across the different subject areas are evident. In biology, physics and chemistry, there is a shared emphasis for example on developing knowledge and understanding of scientific processes, techniques and procedures and application of scientific skills in solving problems in a variety of theoretical and practical contexts. Mathematics in the IAB has the same focus on developing problem solving and mathematical reasoning skills, and a distinct focus on applying mathematics in real-world contexts. English language outcomes in the IAB cover the development of reading, writing, listening and speaking skills as in GCSE Level programmes in English as a second language.

In terms of content, similar topics are covered in the IAB as are included in the GCE AS/A Levels in the sciences, whilst acknowledging some differences in focus and depth given the lower volume of study covered in each subject within the baccalaureate curriculum of the IAB relative to that of single subject A Level programmes. In mathematics, there is more of a

focus on discrete mathematics in the IAB programme compared to the GCE A Level, while both share coverage of similar topics in pure mathematics and probability.

The IAB assessment framework includes both continuous and summative assessment whereas the GCE A Levels are assessed exclusively by summative written examinations. The sample of Grade 10 and Grade 11 IAB continuous assessments nevertheless include similar types of question, including multiple choice and structured questions, and assess topics also evaluated in the GCE AS and A Level examinations.

Moreover, the range and type of cognitive skills assessed in the IAB comprehensive exams are comparable to those assessed in the GCE A Level examinations, topics included in both GCE A and AS Level syllabuses are also included in the IAB examinations. Cognitive skills assessed include knowledge and understanding, application, including solving problems using multi-step calculations and evaluation of scientific data, with some questions in the IAB science subjects also focusing on experimental contexts. In IAB English language, the skills of extracting and interpreting meaning from texts and writing for different purposes including summary writing are assessed, skills also forming part of the GCSE assessment in English as a Second Language.

The IAB cross-curricular project assesses a range of transferrable and also general cognitive skills expected to be able to demonstrate higher education readiness, including time management, team working, organisation and problem solving skills, which are included as assessment criteria. These skills correspond well to skills required to attain GCE A Levels, and further support the overall comparability of IAB Diploma outcomes.

The scope and volume of IAB summative assessment compares more closely to the AS Levels in individual subjects, assessing fewer topic areas than those included in the linear GCE A Level examinations. Therefore, while the educational outcomes of the IAB Diploma on an overarching level are comparable to GCE A Level standard, individual IAB subjects demonstrate closer comparability to the GCE AS Level standard.

The summative assessment materials developed and taken at IAB pioneer schools in Saudi Arabia were examined and found to be of a comparable level to those developed for schools in Lebanon. Therefore, the same overall levels of comparability in the context of the UK system apply to the IAB Diploma irrespective of the country (Lebanon or Saudi Arabia) in which they were taken.

The assessment and delivery of the IAB Diploma are supported by quality assurance processes defined, principally in the IAB Assessment Policy. The development of the exams follows a pre-defined process, while continuous formative exams are developed by schools but are also subject to a thorough external quality review by ERC. Ongoing monitoring of schools and individual students is conducted by ERC, who assist teachers in identifying areas for further improvement. The administration of the exams is supported by a clear set of guidelines and code of conduct. Furthermore, the quality assurance of the marking is ensured by use of clearly defined mark schemes and the practice of double marking of all exam papers assures that students receive a final grade reflective of their performance and ability across the subject areas.

The following comparability statement summarises the recommended levels:

Qualification:	International Arab Baccalaureate Diploma (awarded from 2017)
Awarding Institution:	International Arab Baccalaureate (IAB) Board
Comparability:	Is considered comparable to the overall GCE A Level standard Individual subjects, with the exception of IAB English language, passed at 60% may be considered comparable to GCE AS Level standard

Notwithstanding the strengths outlined above, a number of areas for future development were identified in regard to the assessment. In particular, the processes used in developing the continuous assessment may benefit from further review and development to ensure consistency in the reliability of assessment and level of demand between the tests. Moreover, the scope and length of the comprehensive exams could be extended to include a greater number of experimental and synoptic questions.

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1. Introduction

The International Arab Baccalaureate (IAB) Diploma is an international qualification designed to be taken by secondary school students alongside the national secondary school qualifications in Lebanon and the Kingdom of Saudi Arabia. It is developed and awarded by the IAB Board, a constituent body operating under the auspices of the Educational Research Center (ERC) based in Beirut, Lebanon. Following its first offering in 2010, revisions were made to the IAB Diploma programme in 2014 including the introduction of a new comprehensive examination to be taken in Grade 12. The IAB is currently offered in a number of schools in Lebanon and Saudi Arabia with the first cohort of the IAB Diploma taking the IAB comprehensive exams in 2017.

UK NARIC previously undertook an initial review of the revised IAB Diploma and its delivery in 2015, followed by an interim consultancy project in 2016. UK NARIC is now undertaking the third and final stage, with a view to benchmarking the IAB Diploma and evaluating its overall level of comparability in the context of the UK education system. The process involves an in-depth analysis of IAB core components in relation to two recognised UK upper secondary qualifications, the GCE AS and A Levels. Following the first cohort's completion of the comprehensive exams in August 2017, this project evaluates the new IAB assessment framework.

To inform the benchmarking process, site visits to Lebanon in June 2017 and October 2015 were undertaken by the UK NARIC project team to conduct meetings with ERC staff involved in the development of the IAB, and to visit a number of public and private schools offering the IAB programme, to observe lessons and to meet with IAB teachers in person.

Structure of the Report

The methodology used to conduct this benchmarking exercise is provided in Section 2 of this report. Section 3 comprises five main sections, Section 3.1 includes a review of the IAB Diploma and its constituent components. Section 3.2 provides the comparative analysis of Diploma core components against the UK education system, including detailed consideration of content, learning outcomes and assessment. Section 3.3 summarises the level of comparability of the IAB in Lebanon while Section 3.4 considers the comparability of the IAB Diploma taken in Saudi Arabia. Section 3.5 provides overarching recommendations for the further development of the IAB Diploma.

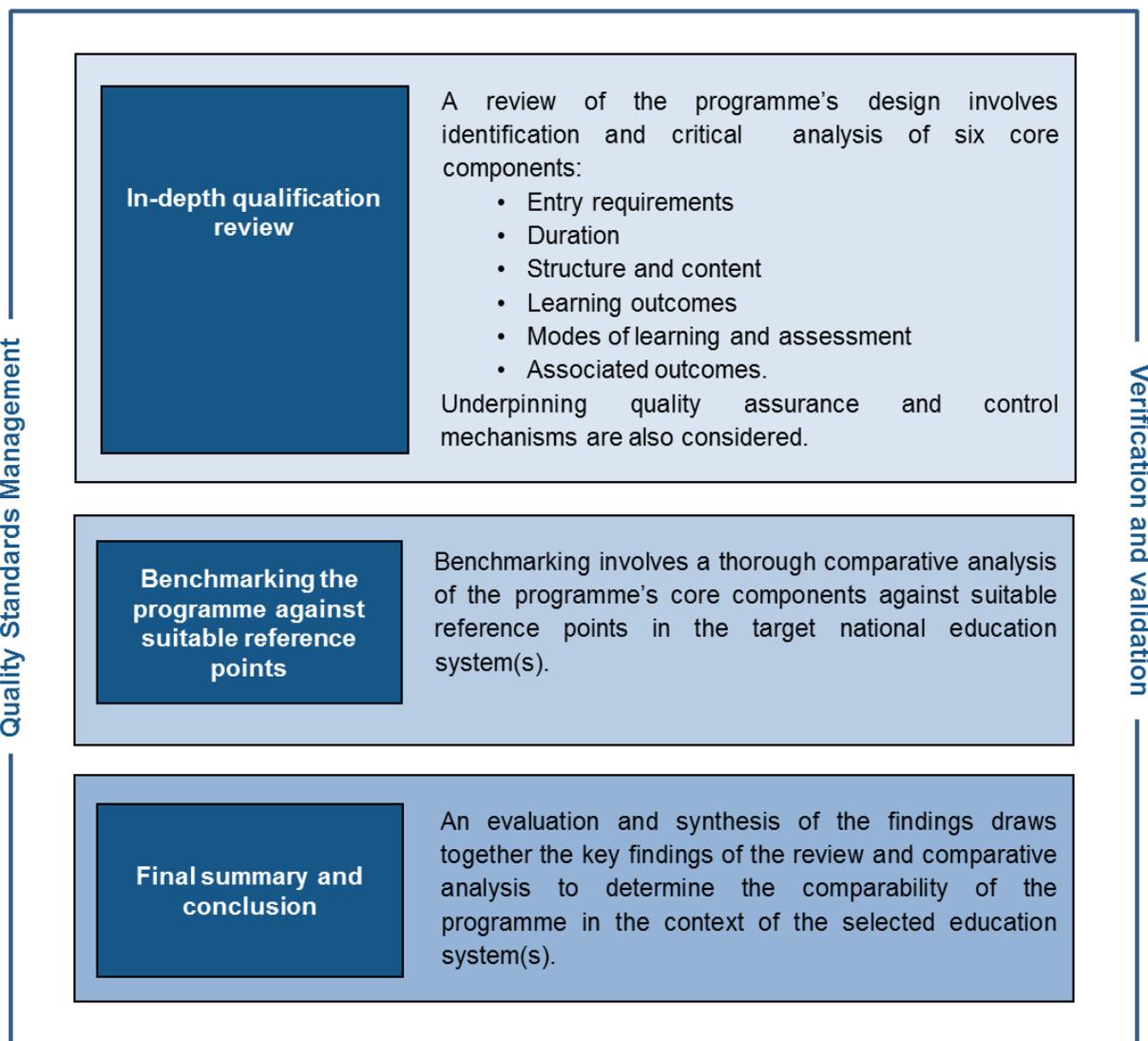
There are four appendices included in this report. Appendix 1 contains the subject comparative analyses, with each of the subjects (with the exception of Arabic and French) in the IAB comparatively examined in relation to the GCE AS/A Level in terms of their aims, content, objectives and assessment format and method. IAB English Language is comparatively analysed against GCSE in English as a Second Language. Appendix 2 includes the review of quality assurance mechanisms which underpin the IAB design, delivery and assessment whilst Appendix 3 provides an overview of the UK upper secondary education system. Appendix 4 lists out the key documentation used to complete this study.

2. Methodology

2.1 Methodological Process

The methodology employed by UK NARIC in this study is designed to ensure a robust and transparent evaluation of the IAB. The methodology is based on UK NARIC’s established process for credential evaluation, which involves the key steps illustrated in Figure 1.

Figure 1: UK NARIC Methodological Process for Benchmarking Qualifications



2.2 Sources of Information

The main UK sources include GCE AS/A Level specifications and sample assessment material in the relevant subject areas. Sources received from ERC include Learning Outcomes for each subject, copies of the comprehensive exams for Lebanon and Saudi Arabia with answer keys. An exemplar cross-curricular project was submitted for review as well as information on the student performance of the current cohort from one of the IAB

pioneer schools. Information on quality assurance including an Assessment Policy has informed the review of quality assurance processes in Appendix 2.

A site visit was conducted to ERC Offices in Lebanon to interview subject experts and IAB operations staff on the quality assurance of the IAB assessment. Furthermore, a visit to an IAB school provided an opportunity to observe the delivery of IAB lessons which informs the review of delivery in Section 3.1 of this report.

2.3 Identification of Core Qualification Components

In order to benchmark any qualification, it is important to ensure a thorough understanding of its design. This is achieved by first considering the overarching aims and purpose of a qualification² before isolating the core qualification design components, outlined above in Figure 1. Further explanation of these components, along with the specific considerations relevant to this study, is provided overleaf.

² This provides a clear understanding of the rationale behind the qualification's development and provided useful context for the programme's content, assessment and learning outcomes.

Table 1: Core Qualification Components for Benchmarking**Entry requirements**

Entry requirements are used as a general indicator when evaluating qualifications given that they indicate the typical level of students at the beginning of a programme.

Duration

Duration is also a consideration in evaluating qualifications. Whilst not an overriding indicator of academic level, when considered in conjunction with the qualification's entry requirements, it can nevertheless provide an indication of the volume of study that can be completed within the specified timeframe of the programme.

Structure and content

Consideration of the overall structure as well as different pathways or routes to qualification where applicable, along with the content, in particular the breadth and depth of content relative to the identified reference points helps to establish the overall comparability.

Learning outcomes

The term "learning outcome" is used to identify the key knowledge, skills and competencies that candidates are expected to be able to demonstrate upon successful completion of the qualification.

Modes of learning and assessment

Considering the modes through which a qualification is delivered supports understanding of the qualification and identification of suitable reference points in the benchmark education system.

The review of assessment centres on summative assessment and seeks to identify the following:

- The method(s) used to test students, whether these are internal and/or externally set and how these contribute to the overall qualification
- Whether the methods of assessment provide an adequate evaluation of the key skills outlined in the learning outcomes
- Whether the methods of assessment require all candidates to demonstrate the knowledge and skills required to meet the learning outcomes at the appropriate educational level of each qualification.

Associated outcomes

The term 'associated outcomes' is used to encompass any academic (e.g. progression) or professional rights attached to a qualification.

Consideration must also be given to the quality assurance and control mechanisms that oversee and underpin the development, delivery and assessment of the award. These include:

- Learning provider recognition/status
- Qualification development processes and practice – including processes in place for developing/reviewing content
- Assessment, grading and standard setting processes – including guidelines and processes in place for assessment development, marking and moderation.

2.4 Comparative Analysis

Each subject comprising the IAB is comparatively analysed against the GCE AS/A Level in terms of aims, subject content, learning outcomes and assessment, format and question types. The subject level analyses are included in the appendices and these inform the overall comparability of the IAB Diploma.

An overarching analysis of the IAB Diploma is then conducted, drawing on the findings of the subject level analyses, which compares the core components against the GCE AS/A Level with a view to making an overall conclusion regarding the comparability of the IAB. Given that the IAB is a baccalaureate style award, the overall comparability relates to the IAB Diploma and not to the individual subjects. The overarching analysis forms the main body of this report.

2.4.1 Specific considerations for this study

In regard to reference points, it is important to note that English language is taken as a second language in the IAB in Lebanon and as a foreign language in Saudi Arabia. It therefore has different aims to the AS/A Level in English language, which focuses more on the theory of the English language use and its acquisition. The most appropriate benchmark in the context of the IAB comparative analysis is the GCSE in English as a Second Language which also focuses on developing language proficiency across a range of practical contexts. No direct comparator is available for the cross-curricular project, therefore the skills and attributes and their assessment are considered in general in relation to the skills expected for higher education readiness in the UK.

In terms of qualification design, it is noted that the IAB does not have specific aims or assessment objectives as are apparent in the GCE AS/A Level specifications. In the absence of aims and objectives, the 21st century skills section of the subject Learning Outcomes documents can provide an indication of the core skills developed through the IAB subjects which can be compared to the GCE AS/A Level assessment objectives. Furthermore, the assessed skills of the continuous assessment and the IAB comprehensive exams can also be referenced against the GCE Assessment Objectives.

Examining the methods and rigour of the IAB assessment relative to the GCE AS/A Level examinations forms an important part of the evaluation process. In the case of the IAB, consideration is firstly given to comparing the IAB continuous assessment tasks from a sample taken in Grade 10 and Grade 11 in Lebanon. The IAB comprehensive exams taken in Lebanon are reviewed and compared to GCE AS/A Level assessments, whilst acknowledging differences in the volume of assessment given the baccalaureate nature of the IAB programme. The KSA versions of the comprehensive exams are also reviewed and cross referenced with their Lebanese counterparts to evaluate the consistency and broad comparability in the volume, breadth of topics and range of assessed skills.

2.5 Benchmarking and Evaluation

The overall comparability of the International Arab Baccalaureate (IAB) is determined during this stage by combining the findings of the qualification review and the outcomes of the comparative analysis.

The comparability statements provided by UK NARIC are intended as informed guidance and to demonstrate how qualifications align to national education standards. A UK NARIC comparability statement should not be considered as, nor presented as, formal accreditation of a qualification.

3. Key Findings

3.1 Overview of the International Arab Baccalaureate

3.1.1 Aims and Purpose

As highlighted in the previous report “Review of the IAB” (2015), the IAB has been designed by ERC to provide upper secondary education for the Arab world. It is intended to be offered alongside the national curriculum in Lebanon and Saudi Arabia to enhance and add value, emphasising a holistic preparation for higher education and the 21st century working life. The qualification is designed to “to align with the latest developments in educational research, which promote higher order thinking skills and critical thinking rather as opposed to traditional rote learning of course materials”³. It has been developed based on a learning outcomes approach, as this reflects the aim to focus on the development of students’ skills and attributes as well as on extending and broadening the students’ understanding of the subject.

In Lebanon and Saudi Arabia, IAB students study for the national examinations and university entrance exams alongside the IAB. An overall aim of the IAB programme is to bridge the perceived gap between the knowledge covered in the national curriculum and the additional skills that may be expected for entry into international universities, particularly in the UK and the US. Assessing a comprehensive range of skills at upper secondary level is therefore a key aim of the IAB. It is intended that IAB students develop the ability to be able to direct their own studies and develop awareness of their own culture and other cultures.

3.1.2 Underpinning Philosophy

The design and delivery of the IAB is based around Profile Shaping Education (PSE), which is a pedagogical framework developed by researchers and academics at the ERC in Lebanon. PSE is designed to incorporate the skills required to help students succeed in modern life. The skills are based on identified traits of accomplished people, taking into account the Arab local vision for education, local culture and heritage.

The PSE framework encourages students to be paradigmatic, proactive and principled under the 4 P Profile. These characteristic attributes are the cornerstone of the IAB programme, and are considered important to enable the transition from school to university and the workplace. The PSE is designed to encourage cross-disciplinary learning, in which students develop understanding of the connections between academic subjects and every-day and real-life applications.

3.1.3 Overarching Structure and Design of the IAB Diploma

The IAB programme starts at the beginning of the secondary education cycle in Lebanon and Saudi Arabia, Grade 10, and lasts three years in duration until the end of secondary

³ Professor Ibrahim Halloun, 2012. Taxonomy and Learning Outcomes in Profile Shaping Education. [online] Available at: <<http://www.educationalrc.org/IAB/Data/PSE/PSE%20Taxonomy-English.pdf>>

schooling in Grade 12. At the beginning of the programme in Grade 10, all students take a diagnostic skills test to identify strengths and weaknesses on starting the programme.

The IAB Diploma programme comprises of six subjects including compulsory study of mathematics, chemistry, biology and physics, Arabic and a choice of either French or English. Each subject is equally weighted, accounting for 13.3%⁴ of the overall IAB. In addition to the six academic subjects, the IAB also includes a cross disciplinary project which counts 20% towards the award of the IAB. The curriculum for the IAB academic subjects is based on the national curriculum of subject studied in Lebanon for Grades 10-12.

The curriculum for the IAB programme is set out in the Learning Outcomes documents for each subject, which breaks down the core topic areas into overarching learning outcomes, key skills and attitudes, and achievement indicators. The IAB programme and the assessment follows the same format in both Lebanon and Saudi Arabia, however the language of instruction in Lebanon is English whereas in Saudi Arabia the language of instruction is Arabic.

Cross Curricula Project

The cross-curricular project is designed to provide students with an opportunity to work in a team on a large project of their choosing. The project is required to have local relevance and provide a solution to a real-life problem while integrating skills and knowledge acquired from across the IAB curriculum. Students work in small teams to complete the project, each team having a nominated team leader.

More broadly, the cross-curricula project is designed to develop students' 21st century skills, in particular initiative, teamwork, communication and innovation, skills which are considered to be more difficult to assess by examination alone.

3.1.4 Scheme of Assessment

Skills-based tests are taken at the beginning (pre-test) and end (post-test) of each year. These are used to gauge the level of 21st century skills held by individual students, the results of which are used to inform schools of pupil's progress but do not count towards the final IAB Diploma grade.

Continuous tests comprise the school based assessment during Grades 10 and 11 and are taken in each of the six academic subjects and count 20% in total towards the overall Grade (10% in each year). These tests are set by the schools, quality assured centrally by IAB and marked internally by school teachers.

These are followed by a comprehensive exam at the end of Grade 12 which accounts for 60% of the overall IAB Diploma. The comprehensive exams are set and marked by IAB. The same assessment format is used for the IAB Diploma in both Lebanon and Saudi Arabia.

⁴ Educational Research Center, 2017. IAB Assessment Policy Revised Version. Internal document.

The following table summarises the structure of the IAB Diploma overall scheme of assessment:

Table 2: Structure of the IAB Diploma Assessment⁵

Assessment	Time	Frequency	Type	Type of questions	Percentage of Diploma
Skills-based exam (Pre-test)	Start of Grade 10	1	Diagnostic	Selective response (SR)	-
Course exam	Throughout Grade 10	3	Continuous – subject specific	Selective response + Constructive response	10%
Skills-based exam (Post-test)	At the end of Grade 10	1	Formative General –	Selective response	-
Skill-based exam (Pre-test)	Start of Grade 11	1	Diagnostic general	Selective response	-
Course Exam	Throughout Grade 11	3 / Subject	Continuous general	Selective response + constructive response	10%
Skills –based exam (Post-test)	At the end of Grade 11	1	Formative general	Selective response	-
Cross-disciplinary project	Grade 12	1	Performance based	Constructive response	20%
Comprehensive Exams	Grade 12	1 / subject	Summative – Comprehensive	Selective response + constructive response	60%

The comprehensive exams are two hours duration in each subject, taken at the end of Grade 12. Each comprehensive exam comprises three parts focusing on different skill areas as is demonstrated in the following table:

⁵ Educational Research Center, 2017. IAB Assessment Policy Revised Version. Internal document.

Table 3: Summary of IAB Comprehensive Exam Design⁶

Exam parts	Cognitive level	Type of questions	% of the final examination grade
Part I	Knowledge and Understanding	Selective Response	40
Part II	Applying Scientific Knowledge Application and Analysis	Constructive Response	25
Part III	Interdisciplinary Items Synthesis and Evaluation	Constructive Response	35

The cross-curricula project is evaluated by a panel which consists of subject experts and teachers. Four components comprise the project evaluation as is demonstrated in the table below. Three of the four components, which accounts for 90% of the overall grade for the IAB are assessed for team performance, whilst the remaining 10% is based on the individual's contribution. The following table summarises the component parts of the cross-curricular project and their weighting towards the IAB Diploma:

Table 4: Cross Curricular Project Evaluation⁷

Cross Disciplinary Project Evaluation	
Type of Rubric	% of the total grade
In-class assessment	30
Model / presentation rubric	35
Portfolio rubric	25
Individual presentation rubric	10

3.1.5 Grading

The final IAB Diploma certificate includes a detailed record of student's performance across three types of assessment. The certificate shows the extent to which the student has achieved the attributes defined in the 4 P Profile, with the description of different grading ranges making reference to 21st century skills and higher order thinking skills acquisition.

Each subject is graded on a 0-100 scale, with 60% representing the overall pass mark. An average of 59% or lower results in a failure grade overall. Students must also obtain at least 40% in the assessment of each component except the cross-curricular project which has a

⁶ Educational Research Center, 2017. IAB Assessment Policy Revised Version. Internal document.

⁷ Educational Research Center, 2017. IAB Assessment Policy Revised Version. Internal document.

pass mark of 50% in order to receive the IAB Diploma. The marks correspond to percentages of the raw marks awarded for each component.

The following table demonstrates the grading ranges and a description of the students' level of performance relative to the 4 P Profile:

Table 5: Summary of the IAB Grading System⁸

Stages	IAB Grade	Conventional Grading		Description
4	4A	A*	98-100	The student has an extensive knowledge and understanding of the content and can readily apply this knowledge. Furthermore, the student has achieved a very high level of competence in the processes and skills related to the subject area and can apply these skills to new situations.
	4	A	91-97	
3	3A	B*	88-90	The student has a thorough knowledge and understanding of the content and a high level of competence in the processes and skills related to the subject area. Moreover, the student is able to apply this knowledge and these skills to most situations.
	3	B	81-87	
2	2A	C*	78-80	The student has a sound knowledge and understanding of the main areas of content and has achieved an adequate level of competence in the processes and skills related to the subject area.
	2	C	71-77	
1	1	D	60-70	The student has a basic knowledge and understanding of the content and has achieved a limited level of competence in the processes and skills related to the subject area.
0	0	F	Less than 60	The student has minimal knowledge and understanding in some areas of the content only and has achieved very limited competence in some of the processes and skills related to the subject areas.

⁸ Educational Research Center, 2017. IAB Assessment Policy Revised Version. Internal document.

3.1.5 IAB Delivery

Teacher Training

A review of teacher training formed part of UK NARIC's site visit to Lebanon undertaken in 2015, in which a number of teachers were interviewed and feedback was provided on their training and experiences of teaching the programme. Teachers receive training from ERC trainers on the key principles of the programme, including PSE. Whilst IAB teachers are already qualified through national teacher training programmes, the supplementary IAB training is intended to train teachers to become moderators and facilitators. IAB teachers are trained both to impart subject knowledge and to provide students with a values-based education, which promotes intercultural awareness and global citizenship, reflecting the IAB programme ethos.

One year in duration, the training combines coverage of the theory on the philosophy of the IAB programme as well as practical training in schools. In Lebanon, IAB teacher training is conducted one-on-one whilst in Saudi Arabia, it is carried out in small groups with two trainers per group. Continued guidance is provided to teachers after they complete their training and they continue to work in close collaboration with the subject experts at ERC⁹.

Observations on Delivery

During the UK NARIC site visit to Lebanon in 2015, one lesson was observed in mathematics Grade 10 focusing on vectors, their properties and the centroid. The beginning of the lesson provided a useful review of material covered from the previous lesson. Reflecting the IAB approach, the lesson was student-centred and involved a significant amount of teacher-student interaction, with the teacher posing problems to the students and then asking the student to demonstrate their solution and strategy to the rest of the class.

A good balance was achieved between directing and correcting the student's errors, and encouraging independence of thought, allowing students to suggest their own strategies and solutions to problems. Students were also encouraged to provide feedback on each other's suggested methods and solutions, demonstrating the collaborative approach to problem solving, reflected in the IAB lesson plans. The lesson moved at a fairly fast pace but met its key objectives; students showed a good grasp of the subject matter and ability to apply it to solve related problems¹⁰.

Two additional classes were observed on the second site visit to Lebanon in June 2017. The first was a Grade 11 class in physics, on the topic of electrostatics. The class was delivered to be student-centred, with the teacher asking a series of open-ended questions focused on real-world examples of charging by friction. Class participation was good, with the majority given the chance to contribute to the discussion.

A chemistry class for Grade 11 was also observed, the topics covered included an introduction to organic chemistry and organic compounds. Linking with the learning outcomes of the lesson, the teacher asked students for real-world examples of different

⁹ UK NARIC, 2015. "Review of the IAB" Report

¹⁰ UK NARIC, 2015. "Review of the IAB" Report

types of compounds, and explained the history and developments in organic chemistry. Students were also able to contribute by asking questions on the structure of organic molecules, providing a further opportunity for interaction and teacher verification of the students' understanding.

In conclusion, from the range of lessons observed, the delivery was observed to support students' acquisition of the critical thinking and understanding required to successfully meet the IAB programme objectives. Reflecting the ethos of the IAB programme, critical thinking skills are promoted through teachers' follow-up questions prompting students to justify their responses. This technique helps prepare for the assessments which place significant emphasis on solving problems while being able to explain and justify conclusions and solutions. There is therefore a clear link observed between the IAB lesson plans, the methods of assessment and the overall ethos of the programme and its practical delivery in the classrooms.

3.2 Comparability of the IAB Core Components in the Context of the UK National System

The following section specifically examines the IAB core components in relation to those of the UK GCE A/AS Level qualifications to determine overall level of comparability. Please see Appendix 3 for an overview of the UK upper secondary system, including GCE AS and A Levels.

Aims and Purpose

The IAB is primarily intended for able students from the start of upper secondary in Grade 10 to develop and enhance their skills for progression to further education and / or to employment. This mirrors the overall aim of the GCE A Level as an upper secondary award, while acknowledging that the baccalaureate design of the IAB differs from that of the single subject approach of the GCE A Level. Whereas, the GCE A Level specifications have subject-specific aims, the IAB prescribes holistic aims at an overarching Diploma level to develop the attributes and values of the individual student according to the 4 P Profile as indicated in Section 3.1. Offered as a baccalaureate, the IAB incorporates a strongly interdisciplinary aspect intending to develop the students' appreciation of the links between the different academic subjects, which include languages alongside the STEM subjects.

Having acknowledged the differences in design and scope between the IAB and the GCE A Levels, a number of similar themes could be identified in the IAB learning outcomes and content and lesson plans in relation to the aims and objectives of the GCE A Levels in specific subjects. For example, a common theme across the GCE A Level specifications is to encourage understanding of the different areas of study within the subject and their relationship to each other. This theme is also well reflected in the IAB outcomes which expect students to recognise and understand the relationships between topic areas. A further aim which is common to all GCE A Level science subjects is to encourage further exploration and investigation of the subject. This is an aim strongly reflected by the IAB "Assess and Extend" component of the IAB lesson plans which encourage students to

explore further. The IAB and GCE A Level subject specifications also share the aim to facilitate the skills and knowledge for further study at Higher Education level.

3.2.1 Entrance Requirements

The entrance level for the IAB is successful completion of Grade 9, lower secondary education in Lebanon and Saudi Arabia. Students must demonstrate the necessary competence in mathematics and in English / French and Arabic languages. Individual schools may set diagnostic tests to decide which students should study the IAB programme. The programme is only intended for eligible students choosing to study the Sciences Stream from Grade 10 to Grade 12 in Lebanon and Saudi Arabia.

This is broadly similar entrance level to the GCE AS/A Level, which start on completion of 11 years of compulsory schooling in the UK. The UK has a total of 13 years of schooling as opposed to 12 in Lebanon and Saudi Arabia, and lower secondary level ends in Year 11. Students are typically required by schools to successfully pass five GCSE passes to progress onto GCE AS/A Levels in specific subjects including English and maths. However, there are no officially defined entrance requirements set by the national awarding bodies.

3.2.2 Duration

The duration of the IAB programme is three academic school years spanning from Grades 10 to Grade 12. The total number of guided learning or independent study hours is not stipulated for the IAB, however the lesson plans indicate that 40 minutes of guided learning time is allocated to each lesson and that independent study in the form of homework tasks is expected. Lessons take place from Grades 10-12 in each academic subject.

In the UK, GCE AS and A Level courses last two years as opposed to the three taken to complete the IAB. The total number of notional learning hours for each GCE A Level is 360, while AS Level takes 180, constituting half the volume of study required to study the GCE A Levels. Acknowledging the difference in the number of hours dedicated to each subject, it is important to note that students in the UK typically take three A Level subjects whereas IAB students take six academic subjects plus the cross disciplinary project, which is taken in Grade 12. Three GCE A Levels are typically required for entrance into tertiary education in the UK.

There is no fixed duration for the IAB cross-disciplinary project as this is taken alongside the academic subjects in Grade 12. The Extended Project Qualification in the UK is offered as an AS Level for which there are 180 notional learning hours.

3.2.3 Programme Structure and Content

The curriculum for the IAB across the sciences, mathematics and English language is based on the national curriculum in Lebanon and Saudi Arabia. The content of the individual subjects in the IAB (biology, chemistry and physics) and mathematics, covers a range of topic areas also included in the GCE AS and A Levels. As is also the case in the GCE AS/A Level programmes in the subjects reviewed, all the content in the IAB subjects is mandatory and there are no optional topics.

Overall, there is a fair degree of overlap between the content of the IAB and the GCE AS and A Levels in the individual science subjects in terms of broad topic areas, albeit with differences observed in depth of coverage, particularly when in comparison with the GCE A Level syllabi. Given the baccalaureate structure of the IAB Diploma award, proportionally less content overall is covered in individual subjects when compared to the GCE A Levels which as acknowledged are designed to be taken in three / four subjects. Whilst the IAB programme includes reference to experimental skills, the GCE AS/A Levels in the science subjects have more overall emphasis on practical work, including a greater number of experiments specified for each topic area, particularly in chemistry and physics.

The IAB across all subjects has a particular focus on topics related to technology and society, including the impact of scientific advancements on the environment. IAB content also has a stronger focus, in comparison to the GCE AS/A Level, on appreciating the historical context of scientific and mathematic developments. While both cover pure mathematics and probability, the IAB Mathematics includes topics on discrete mathematics and matrices in more depth than the GCE A Level. The GCE A Level by contrast includes a greater focus than the IAB programme on statistics and mechanics.

In English language, the development of skills is given more attention than the knowledge of individual topics in both the IAB and the selected reference point, the GCSE in English as a Second Language. The four skill components, reading, writing, listening and speaking are covered in broadly equal proportions across both programmes. The IAB has a strong emphasis on developing knowledge of grammar and spelling in English, which is also reflected in the content of the GCSE.

Further, more detailed comment on the specific similarities and differences in depth and breadth of content can be found in the appendices for each IAB subject.

3.2.4 Learning Outcomes

Learning outcomes are expressed on a subject-specific level in both the IAB and GCE AS/A Level specifications. Overall in the sciences, they highlight a similar range of cognitive abilities, including the ability to define, describe, explain concepts and ideas relating to knowledge and understanding. IAB learning outcomes also make reference to the ability to apply, analyse, discuss and compare, in reference to higher order thinking skills also stated in the GCE AS/A Level subject specifications.

IAB learning outcomes in mathematics make direct reference to the abilities to calculate, conduct proof, translate situations mathematically and solve multi-step problems. The range of cognitive skills specified in the IAB outcomes corresponds broadly to those specified at a topic level for the GCE A Level. Moreover, IAB outcomes in English Language incorporate a number of competencies also developed in the GCSE, including the ability to identify information and themes in texts and spoken discourse, as well as the abilities to write and speak in English for varying audiences, and interact effectively in discussions.

Learning outcomes are not specified for the IAB cross-curricular project, however assessment criteria provide guidance on the main skills and competencies which provide a basis for evaluation.

3.2.5 Assessment

In terms of assessment methods and format, the IAB is assessed through continuous internal (20%) and summative external assessment (60%) in the individual subject areas whilst the GCE A and AS Level are assessed in a linear assessment format with all written examinations taken at the end of the two-year programmes. The total volume of assessment (both summative and continuous), when considering the three continuous exams taken in Grades 10 and 11 and the cross curricula project can be considered comparable to GCE A Levels. The volume of summative assessment in individual subjects however most closely matches the GCE AS Level, while acknowledging that topics included in the IAB assessment cover those that feature in both the GCE AS and A Level. As with the GCE AS/A Level, there are no retakes for any component of the IAB assessment.

Assessment Rigour: IAB Lebanon

Sciences (Biology, Chemistry and Physics)

The IAB continuous assessment taken in Grades 10 and 11 provides scope for evaluating a broad range of topics, including those that may not be assessed in the comprehensive exam. For example, the sample Grade 10 and 11 tests in biology assess knowledge and understanding of the nervous system, plant biology and the endocrine system which are not covered in the comprehensive exam. Structured questions in the continuous tests are observed to assess comparable skills and knowledge to similar questions in the linear GCE AS/A Level examinations, including application of knowledge to solve problems of varying complexity in practical and theoretical scenarios.

In terms of content coverage, the IAB comprehensive exams in the sciences assess a mixture of topic areas from across Grades 10-12, most of which are also included in the UK GCE AS Level, whilst other topic areas only feature in the GCE A Level programme. Overall, the questions set in the comprehensive exams cover a broad range of learning outcomes across the IAB curriculum, with Part II and Part III demonstrating a clear link to outcomes specified in the science and technology section of the IAB learning outcomes documents.

When considering the comparability of the questions in the IAB comprehensive exams, it was found that the majority of the multiple-choice questions in Part I of the exams assess theoretical knowledge and understanding of topics also included in the GCE AS Level curricula, relating to Assessment Objective 1 of the GCE. Some of the multiple-choice questions also assess application, drawing on GCE Assessment Objective 2, both in theoretical and practical contexts. Parts II and III of the IAB Comprehensive exams also include questions which assess the application of scientific skills and knowledge to solve novel problems and scenarios.

It is noted that a small number of the overall marks in the IAB are awarded for extracting data from charts and texts in the science exams, which is not an assessed skill in the GCE A Level but does feature to a limited extent in the GCSE assessment. As the number of marks allocated to these questions is small compared to the marks allocated to higher order thinking skills, this does not have a direct impact on overall comparability of the IAB

assessment, but may be worth reviewing in the future development of the assessment design.

Part III of the IAB comprehensive exams allows some scope for synoptic assessment, integrating different areas of the curriculum and drawing upon knowledge of content from the other sciences being interdisciplinary in nature. This also reflects the synoptic nature of the newly offered linear GCE A Level, which incorporates a number of questions which assess the integration and evaluation of topic areas, relating to GCE Assessment Objective 3 (AO3). Acknowledging that this skill area is assessed in one area of the summative exam, there could be scope for including a greater number of synoptic questions assessing multiple topic areas from across the programme of study.

Parts of the structured questions in Part II and III in the IAB chemistry and biology comprehensive exams also include a number of questions that require evaluation and analysis of experimental data, providing assessment of experimental skills referenced under GCE Assessment Objective 3. However, it was observed that the IAB Physics comprehensive exam questions focus predominantly on application in theoretical contexts and do not explicitly require interpretation, evaluation and analysis of experimental results. A greater emphasis was observed in the GCE A Level examination papers than is evident in the IAB comprehensive exams across all the sciences (biology, chemistry and physics) on designing scientific experiments and suggesting modifications and improvements to the scientific method.

Mathematics

Whilst the number and range of assessed topic areas is more limited in the IAB assessment in mathematics compared to the GCE A Level, the assessment nevertheless provides scope for evaluating a similar range of mathematical skills. These include the following and relate specifically to the GCE A Level assessment objectives as follows:

- Recalling mathematical knowledge, terminology and procedures (GCE AO1)
- Reason, interpret and communicate mathematically (AO2)
- Solve problems within mathematics and in other contexts (AO3)¹¹.

There is particular emphasis in the IAB assessment on applying mathematics across different contexts, reflective of AO3 in the GCE A Level, questions which assess these skills are evident in Part III of the comprehensive exam. The IAB includes a greater proportion of questions, particularly in Parts II and III which make direct reference to real-world situations than are evident in the GCE A Level sample exams. There are however similarities between the IAB and GCE A Level assessments in generic skills in solving extended structured problems involving multiple steps, using mathematical reasoning skills, logical deduction and inference.

¹¹ Pearson Edexcel, 2017. GCE A Level Mathematics Specification. [pdf] Published by: Pearson Edexcel. Available at: <<https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-l3-mathematics-specification.pdf>>.

English Language

The reading component of the IAB assessment can be considered to be broadly comparable with the GCSE in English as a Second Language. The texts are comparably demanding and the associated tasks assess comprehension to a similar level, for instance they assess the ability to identify information, understand themes and viewpoints in texts of varying styles.

The free-response writing task is optional in the IAB while it is a compulsory skill in the GCSE summative assessment. The criteria highlight assessment of a similar range of skills facets such as organisation, grammatical accuracy and content as those included in GCSE assessment criteria. However, it is not possible to gauge the level of comparability of the writing modality and its assessment to that assessed in the GCSE due to the absence of grading descriptors. Grading descriptors are required to ascertain the level of skills required to gain a pass in the assessment, and subsequently to compare and differentiate the varying levels of performance.

Cross Curricular Project

In terms of assessment, IAB students are expected to make a group presentation on the findings of their project and produce a portfolio report. Each group is awarded a score which accounts for 90% of the overall mark with the remaining 10% of the assessment based on individual performance. The UK Extended Project Qualification (EPQ) similarly requires a presentation and final report, although it is assessed solely on an individual rather than group level and as such is less suitable as a direct reference point for the IAB cross-curricular project.

The cross-curricular project incorporates assessment of higher order thinking skills such as analysis and synthesis, which are prescribed across many of the GCE A Levels in individual subjects, while also offering broader scope for assessing transferrable skills. Moreover, the criteria used in assessing the IAB project portfolio cover a range of skills associated with demonstrating higher education readiness including but not limited to the following key competences:

- Applying cross-curricular knowledge and understanding
- Developing independent research skills
- Time and resource management
- Problem solving skills
- Oral and written communication skills including presentation skills
- Teamwork and organisational skills.¹²

Assessment Rigour: IAB Saudi Arabia

The assessments used in Saudi Arabia (translated from Arabic) were reviewed and compared with those used in Lebanon. Overall it was observed that the IAB comprehensive exams used in Saudi Arabia follow the same format and contain a similar allocation of marks to each overarching part. This reflects a similar overall weighting placed on knowledge and

¹² Educational Research Center, 2017. IAB - NIEGB - Biodegradable Products (Portfolio Rubric). Internal document.

understanding, application and interdisciplinary skills. The level of skills and range of topics can therefore be considered broadly comparable to that of the IAB comprehensive exam (Lebanon).

It was observed that particularly in chemistry, the IAB comprehensive exam developed for Saudi Arabia covered a broader range of topic areas than those covered in the Lebanese comprehensive exam, and the other IAB KSA exams in other subjects. This was particularly the case in Part I (multiple choice). There are also a fewer questions on experimental skills such as planning and interpreting results across the science papers developed for KSA, although it is also observed that the Lebanese IAB exams also contain fewer experimental questions than are evident in the GCE A Level assessment. In the interests of quality assurance, maintaining consistency will be an important consideration in the volume and breadth of assessment between the comprehensive exams developed for Saudi Arabia and Lebanon and between the different subjects.

Student Performance

The results of IAB students from the Al Hussan Model National High School for Boys – Dammam, the school receiving the best results in the IAB Diploma, were reviewed as part of this study. Approximately half the cohort had passed the IAB Diploma, with the majority of those passing receiving a D grade. Only one student scored above a C grade with an overall B grade attained. According to ERC, the relatively low passing rates are a reflection of the early adoption of the programme and its delivery methods and assessment. It is envisaged that results will improve, once schools, teachers and students gain familiarity with the assessment methods and comprehensive exam format.

Overall Conclusions on Assessment

The IAB assessment, which combines continuous and summative components, can be considered broadly effective and valid in assessing a range of outcomes from across the IAB curriculum. The validity of IAB's assessment is also reflected in the use of real-world problems and in particular, an interdisciplinary approach which integrates knowledge and understanding from across the different subject areas.

In terms of comparability to the UK GCE, IAB assessments cover topics similarly assessed in the GCE AS Level while also assessing a number of topics covered in the GCE A Level in biology, chemistry, physics and mathematics. The skills assessed in the IAB exams, including the comprehensive exams, also broadly relate to the general cognitive and subject-specific scientific skills evaluated in the GCE AS/A Level assessments, with some differences evident in emphasis, particularly in relation to experimental skills. The total volume of summative assessment and number of topics assessed in the IAB comprehensive papers compares closest with the GCE AS Level (two hours in the IAB, three hours AS Level). The IAB continuous assessment to some extent allows scope for evaluating knowledge and understanding of topics not assessed in the IAB comprehensive exams, although its topic specific focus provides less facility for synoptic assessment.

3.2.6 Associated Outcomes

The IAB Diploma, like the GCE A Level is intended to lead onto tertiary level study or employment. The GCE AS Level in individual subject areas is not accepted for entrance into university, but can support individual applications if taken alongside GCE A Levels. Students taking the IAB, given its baccalaureate style approach, can be evaluated for their achievement on the overall Diploma as well as in individual subject areas. Given the emphasis on the STEM subjects, the IAB potentially allows a broad range of progression opportunities to study subjects such as mathematics and science at tertiary level.

The transferrable skills acquired and assessed in the cross-curricula project such as initiative, teamwork and communication skills will also assist students in applying for and entering employment.

The associated outcomes of the IAB are not yet clear at this stage as IAB graduates have not yet applied and successfully graduated from university. To an extent, the associated outcomes depend on the scope of external stakeholder recognition of the IAB Diploma both in and outside of Lebanon and Saudi Arabia.

3.2.7 Quality Assurance

Quality assurance and control processes and procedures have been reviewed in detail in Appendix 3. The overall conclusion is that these are generally fit for purpose and sufficient for the purposes of this benchmarking exercise. The process for curriculum development ensures the relevance of the IAB curriculum to students and other stakeholders. Furthermore, the learning-outcomes based approach to IAB qualification design ensures a strong link with delivery, examined through the IAB lesson observations, lesson plans and mind maps.

The development of the assessment materials is managed centrally by IAB. The process in place helps to ensure that the balance of questions, the skills and content assessed as well as the demand is consistent with the learning outcomes prescribed, highlighting overall validity of the IAB assessment. Measures are in place to check the accuracy of the exam materials before they are sent to schools.

The internally written continuous exams are also quality assured by IAB, a process which ensures they match the learning outcomes and level of demand for the stage of study. There are some remaining concerns however regarding the sources permitted and used to develop the questions for the continuous assessment. In the absence of a coherent set of guidelines for developing the questions, there may be some instances in which questions are being reused from textbooks and other openly available third-party sources. This is particularly the case for questions which require presenting case studies, diagrams and supporting data.

The exam administration process is conducted according to a clear set of principles, the roles of the IAB Proctors and invigilators in administering exams helps to ensure the integrity of the process. Security of exam materials is prioritised, with exam papers stored in sealed envelopes in a locked room.

The marking of the continuous exams is moderated by ERC, which provides assurance in the consistency of the marking. In terms of IAB summative marking processes, in contrast to GCE AS/A Level marking practice, IAB assessors do not annotate and record marks on scripts but instead enter marks directly into a tabulated spreadsheet. Without annotation, it is difficult to know exactly how and why marks have been allocated and therefore problematic in verifying the accuracy of the marking of individual assessors. However, the clear structure of the IAB mark schemes and process of double marking to some extent mitigate these concerns, providing overall assurance that students' overall mark on the comprehensive exams are reflective of their overall performance and ability.

3.3 Overall comparability of the International Arab Baccalaureate (Lebanon)

Whilst recognising differences in the volume of study allocated to each subject in the baccalaureate style IAB Diploma relative to the GCE A Levels, the overall range of and scope of general level cognitive skills developed by the IAB can be considered broadly comparable to the GCE A Levels.

The IAB assessment (both continuous and summative) in each of the four STEM subjects includes a range of questions similarly assessing skills expected in the GCE A Levels, with particular emphasis on application skills and to some extent, synoptic and cross-disciplinary assessment. The high pass mark threshold of 60% overall for the IAB ensures that all students passing the IAB are required to demonstrate a degree of higher order thinking skills, including analytical and evaluative skills that are similarly assessed in the GCE A Levels, across these four subject areas. The IAB cross-disciplinary project consolidates and enhances these skills, and develops many of the key attributes associated with higher education readiness, supporting the overall comparability of the IAB Diploma to GCE A Level standard..

In terms of the breadth of material that is assessed in the Grade 12 summative comprehensive exams, individual subjects in the IAB evaluate a combination of AS Level and a more limited number of A Level topic areas. Therefore when considering individual subjects that comprise the IAB Diploma (chemistry, physics, mathematics and biology), a pass in these subjects may be deemed comparable with AS Level standard on a subject specific basis.

Qualification:	International Arab Baccalaureate Diploma (Lebanon)
Awarding Institution:	International Arab Baccalaureate (IAB) Board
Comparability:	Is considered comparable to the overall GCE A Level standard Individual subjects, with the exception of IAB English language, passed at 60% may be considered comparable to GCE AS Level standard

3.4 Overall comparability of the International Arab Baccalaureate (KSA)

The IAB comprehensive exams taken in Saudi Arabia follow the same format as those developed for schools in Lebanon. The overall level of demand, considering the question types and topics covered, relates to that observed in the IAB comprehensive exams developed for Lebanon in subjects apart from English language, which is taught and assessed as a foreign language in Saudi Arabia.

Therefore the following recommended level of comparability can be concluded:

Qualification:	International Arab Baccalaureate Diploma (Kingdom of Saudi Arabia)
Awarding Institution:	International Arab Baccalaureate (IAB) Board
Comparability:	Is considered comparable to the overall GCE A Level standard Individual subjects, with the exception of IAB English language (KSA), passed at 60% may be considered comparable to GCE AS Level standard

3.5 Recommendations

Having found the IAB Diploma comparable to the GCE A Level overall, during the course of this study a number of areas for further development have emerged from the overarching and subject-specific analyses. These are listed and explained in more detail as follows:

- Increase the scope of the comprehensive summative exam by including greater number of structured questions in Parts II and Part III on comparably complex topic areas.

Implementation of this recommendation would, in UK NARIC's view, enable a greater proportion of the 21st century skills to be assessed in the summative assessment, further strengthening assessment validity.

- Include additional questions assessing experimental skills in the continuous exams and comprehensive exam to facilitate closer comparability with the GCE A Level.
- Reconsider the inclusion of questions which involve extraction of information from charts and text in the science subjects.

The skill of extracting data from short texts may be more closely associated with that of a linguistic skill of comprehension as opposed to a scientific skill. Typically, this skill is not assessed in the GCE A Levels, but may comprise a small number of marks at lower levels (i.e. GCSE). Including this type of question could potentially lower the level of demand,

therefore ERC may reconsider whether they should form part of the assessment or strictly limit the number of marks that can be allocated to such questions in the development procedure of each exam.

- Develop descriptors for the assessment of the writing component of the IAB comprehensive exams to enable comparison to recognised level of English language proficiency.

The process for comparing the skill of writing in English language as second or foreign language test relies on a comparative analysis of grading descriptors. In the absence of descriptors, it is difficult to accurately reference and verify performance levels of proficiency in the writing modality.

- Consider assigning higher weighting to assessment of the individual's contribution in the cross-disciplinary project.

Teamwork is recognised as an important skill, particularly for employers and employment in a range of sectors. However, placing more emphasis on individual's contribution in the cross-curricular project would more closely reflect HE admissions' goal, which is to assess each individual's capability of undertaking independent work in academic settings. If all students were required to submit their own individual report, this may provide additional opportunity for developing the independent skills required at HE, whilst still retaining the group- and team- oriented nature of the project itself.

- Ensure thorough proofreading prior to publication of IAB exam materials.

A number of questions, including those from the English language, contained grammatically incorrect wording. It is advisable to conduct a more thorough proof-reading of materials by native English speakers prior to sign off.

- Consider an individual project report requirement for the cross-curricular project.

Extended project qualifications typically involve longer and more comprehensive reports to be submitted as evidence that students have met the criteria. Individual reports could help differentiate between varying levels of achievement of individuals within the groups.

- Reconsider the practice of teachers developing their own questions for the IAB continuous assessment. Alternatively consider using a question bank for the development of the internally assessed exams.

The resources and time required to develop unique and original exam questions may place considerable burden on teachers given the challenges and skills involved in developing good quality exam questions from scratch.

Reliance on reproducing questions from textbooks or past exams for questions raises the possibility of students having already seen the exam questions and the answers before the exams. Considering the high overall weighting of the continuous assessment (20%), using a

question bank of original questions may be advisable for the future development of the IAB continuous tests.

The use of a question bank may also assist in further standardising the continuous assessments, ensuring the overall balance, consistency and level of cognitive demand of the papers sat can be maintained across all schools and classes implementing the IAB programme.