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Alignment between the DP and MoNEP in Turkey and the effects of these programmes on the achievement and development of university students

Final report

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Acronym	Expanded
IBDP	The International Baccalaureate Diploma Programme
IBO	International Baccalaureate Organization
MoNEP	Ministry of National Education Programme
MoNE	The Ministry of National Education
SL	Standard Level
HL	Higher Level
CAS	Creativity-Action-Service
EE	Extended Essay
TOK	Theory of Knowledge
HEC	Higher Education Council
OECD	Organisation for Economic Co-operation and Development
SA	The Scholar Academics
SE	Social Efficiency Educators
LC	Learner Centred Educators
SR	Social Reconstructionist
*c*GPA	Cumulative Grade Point Averages
PSSM	Psychological Sense of School Membership Scale
TMQ	Time Management Questionnaire

Executive summary

The purpose of the research was to explore the alignment between the International Baccalaureate Diploma Programme (IBDP) and the Ministry of National Education high school programs (MoNEP) in Turkey, and their effect on the later achievement at university of the graduates of these two programs.

Brief summary

The curriculum documents relating to the IBDP and the MoNEP gave different degrees of alignment, depending on the subject examined, with regard to philosophical underpinning, content, and cognitive demand. Non-scholastic attributes were seen to be more represented in the IBDP.

Both the IBDP and non-IBDP graduates began university life together, in the same faculties and departments. The non-IBDP group had statistically significant higher scores in the national university entrance exam, while the IBDP graduates had higher cGPAs and individual course grades at university. The IBDP graduates also had a considerably higher graduation rate: nearly three times more of them graduated after four years. The qualitative data from the focus groups helps to explain the difference in the performance of the two groups.

The results show that IBDP graduates seem to be better prepared for university life and more able to build on their previous high school experience to succeed at university.

In this section a summary of the research is provided under three headings: analysis of high school curricular documents, a comparison of the academic performance of both groups at university, and the perceptions of each group on their life at university.

Section I. IBDP and MoNEP written curriculum scholastic and non-scholastic alignment

Four philosophical ideologies were considered as contributing to the curricula of each program. The policy documents and the documents of the four subject areas examined (Turkish, English, biology and mathematics) revealed different philosophical

emphases: the IBDP was found to be more balanced than the MoNEP. However, since both are taught together in Turkish IB schools, the two may be seen as complementary, leading to a balanced overall curriculum.

Content

IBDP is a program for the last two years of high school. The MoNEP is a four-year high school program with time allocation of the subjects examined spread over four years, giving opportunity to cover more content. In IBDP, however, fewer subjects are treated in more depth, giving more time to individual units. Time allocation and content were seen to be reasonably similar for mathematics and biology, different for English and Turkish.

Cognitive demand

The cognitive demand of the IBDP was perceived by teachers teaching both programs to be higher overall than that of MoNEP when considering all four subjects examined. There were subject differences: the curricula for mathematics and biology were similar in their cognitive demand whereas and English and Turkish, the difference was large.

Non-scholastic attributes in IBDP and MoNEP: international-mindedness, civic-mindedness, engagement and motivation

IBDP expectations are more clearly stated, and they are further exemplified in the IBDP core component consisting of the extended essay, theory of knowledge, and creativity-action-service (CAS). Especially in CAS, these expectations are outlined in a concrete form and provide motivation and engagement for students to develop their non-scholastic attributes in real life.

Section II. Academic performance comparison of IBDP and non-IBDP graduates

National university entrance exam

The scores of 385 IBDP and 376 non-IBDP graduates in the competitive Turkish national university entrance exams, held in the last semester of high school, were compared for IBDP and non-IBDP graduates studying at four Turkish universities. The non-IBDP graduates had statistically significant higher scores, which suggests

that they were better prepared for the multiple-choice questions of the university entrance examination than the IBDP group. This was expected as non-IBDP high school students are closely prepared for the examination, and may also attend cram courses in their free time. The IBDP, however, leads to a different type of exam and, as the IBDP students follow both programs, they have little time to spare for extra lessons.

University performance

At university level, the *c*GPAs of the same sample of IBDP graduates were higher than those for the non-IBDP group (3.04 vs 2.69). Similarly, the grades for the common courses for five subject areas taken in the first and second undergraduate years were higher for the IBDP graduates.

The universities that took part in this study are favoured by IBDP graduates both for their quality and because they facilitate the transfer of IBDP graduates with the required *c*GPA between departments. IBDP graduates, aware of their advantage in this respect, transfer to a different department at a rate of nearly 5:1.

Graduation rate

Only one cohort, the class of 2009, had spent four years at university when the research was conducted. The graduation rate for IBDP graduates was found to be nearly three times more than non-IBDP graduates. Of the 70 IBDP graduates, 43 finished their four-year degree program on time, as compared to 16 (of 70) of the non-IBDP group.

Section III. Perceptions of IBDP and non-IBDP graduates about preparedness for university

The perceptions of IBDP and non-IBDP graduates of preparedness for life at university were compared in four aspects: sense of belonging, critical thinking skills, academic preparation, and time management skills. Each aspect was looked at with regard to the impact of high school on social and academic life at university.

Analysis of quantitative data showed no significant difference between IBDP and non-IBDP graduates in these aspects. However, qualitative analysis of the data

acquired during focus group interviews showed differences between their perceptions as summarised below.

Sense of belonging

The main difference between the two groups seemed to be due to the IBDP graduates' need for change and challenge. Their satisfaction and therefore sense of belonging was delayed until their second year because university life presented them with few new challenges, hence many took extra courses. They were critical of the preparedness of their non-IBDP classmates, especially in English.

The non-IBDP graduates, coming into a system where skills for independent work were required, had some difficulty. Nonetheless, they were satisfied with the university, and had a strong sense of belonging from the start.

Critical thinking skills

Three critical thinking tests were administered. The results showed little difference between IBDP and non-IBDP graduates. In the focus groups, however, IBDP graduates expressed more motivation, engagement and critical awareness. The non-IBDP graduates were less questioning and critical. They spoke when addressed, with shorter answers, listening to others rather than volunteering ideas.

Academic preparation

Focus group discussions revealed that IBDP graduates had an advantage over non-IBDP graduates with regard to the use of English (both in class and in written assignments) and in other academic skills learned during high school relevant to university studies.

Time management

Both groups were clear that they were still learning effective time management. However, IBDP graduates said they adapted more easily to the work requirements at university than non-IBDP graduates. They attributed this to their experience of meeting long-term deadlines at high school and juggling two programs at the same time.

Conclusion

The results show that IBDP graduates in Turkey are better prepared for university life and more able to build on their previous high school experience to succeed at university than their non-IBDP peers. We are led to the conclusion that the education received in high school plays an important role in determining how a student can develop his or her potential at university.

Introduction

The International Baccalaureate Diploma Programme (IBDP) is not yet recognized on its own for the purpose of direct entry into Turkish universities. Therefore, in the Turkish IB Schools, the IBDP and Ministry of National Education Programme (MoNEP) have both to be taught. This co-existence naturally presents some complexity in administration for all involved. Some alignment problems may affect the achievement level of students, which will be discussed in the following sections where background information is presented on each program and their co-existence.

Curricula are complex structures which have both scholastic and non-scholastic dimensions. One part of this research, "Alignment between the IBDP and the MoNE high school diploma program in Turkey and their effect on the later achievement and development of university students", seeks to analyse this structure under research questions 1 and 2. They are an attempt to map the similarities and differences in philosophical curricular coverage of IBDP and MoNEP, including non-scholastic activities using the written documents of the respective programs.

The research questions 3, 4 and 5 explore the post-secondary outcomes of IBDP and non-IBDP graduates in Turkish universities, as well as student perceptions of their preparation.

IBDP graduates hope to gain not just the diploma, but acceptance into the most selective universities in a competitive university placement system, as well as the knowledge and skills that will enable them to succeed at university. This research looks at the areas mentioned above to see if this expectation is justified.

This study is multi-dimensional, involving analysis of major policy papers and written high school curricula, data from universities related to entry scores and academic performance, together with analysis of student perceptions.

The resulting data are presented in detail in this report, together with comments relating to implications for different stakeholders including the International Baccalaureate Organization (IBO), the Ministry of National Education (MoNE), the

IBDP schools in Turkey (administrations, teachers, students and parents), universities and maybe other educational researchers.

To examine the alignment of the programs, we first compared the written IBDP curriculum with that of MoNEP. Then the post-secondary outcomes of IBDP graduates in four Turkish universities attended by the majority of the IBDP graduates in Turkey were examined by comparing the scores of IBDP and non-IBDP graduates from the national university entrance examinations. We also analysed their academic performance at the university by comparing their *c*GPAs (Cumulative Grade Point Average), scores in their subject areas, and their continuation and graduation rates.

In the next phase of the study we questioned whether the attributes of the IB learner profile could be used as success indicators during tertiary education. For this purpose, the perceptions of the IBDP and non-IBDP graduates about their preparation at the secondary level for future university education were investigated and compared.

In conclusion, we evaluated the quantitative and qualitative results holistically to determine whether IBDP and non-IBDP graduates have similar potential at the start and how this potential has been shaped by their high school education. We point to implications arising from our data relating to the potential, needs and academic progress of high school and university students.

We hope that our findings may be useful to stakeholders in adapting scholastic and non-scholastic goals, programs and teaching methods to aid both a successful transition from school to university and to help ensure successful academic and non-academic achievement at university. We also suggest possible follow-up research, to amplify, extend or continue this initial study.

Background to the research

International Baccalaureate Diploma Programme (IBDP)

The IBDP is an academically challenging programme of international education well known for its high standards. It is a pre-university curriculum for students aged 16 to 18, aiming to prepare them for tertiary education as well as life beyond. It pays attention to both the scholastic and non-scholastic developmental needs of students, together with idealistic goals of creating a better and more peaceful world (IBO, 2014f).

Designed by the cooperation of an international group of educators in 1964 IBDP represents the best practices from the curricula of different nations. Its assessment policy with criterion-based examinations, evaluated both internally and externally under the same conditions for students of the same age group around the world, has an important effect on its acceptance as a worldwide standard of education (Onur, 2011). There is a program revision cycle of seven years with a transparent, collaborative and consultative process inviting input from all IB schools.

IBDP students study six subjects at higher level (HL) or standard level (SL). Usually, three but not more than four, of these subjects may be taken at HL with an allocation of 240 hours (in this case one hour means 60 minutes) per subject, while the others at SL are allocated 150 hours. Students must choose one subject from each of groups 1 to 5 (studies in language and literature, language acquisition, individuals and societies, sciences, mathematics), ensuring a balanced education by the study of different areas. The sixth subject may either be an arts subject such as dance, music, film, theatre and visual arts chosen from group 6, or another subject from groups 1 to 5 (IBO, 2014f). This may seem quite a limited number of subjects to cover, but George Walker, the Emeritus Director General of the IB explains it as the courage to leave some gaps, “There has been some deliberate attempt to balance breadth against depth, if necessary to sacrifice some quantity in the name of quality” (IBO, 2014a). In this way, providing a more in-depth, real-life connected, research-oriented education, with skills required for the 21st century becomes possible.

In addition to the academic subjects, there are three core components that reflect the philosophical underpinnings of the program: Theory of Knowledge (TOK), Extended Essay (EE), and Creativity-Action-Service (CAS).

> CAS addresses aesthetic, athletic and humanistic aspects of the curriculum, leading to creative, balanced and caring individuals. It is often described as experiential learning. TOK bridges the compartmentalization of the separate courses, training the learner to look at issues from multiple perspectives, developing reflective people. EE puts the academic skills necessary for tertiary education into practice, developing the inquirer and the critical learner in the IB learner profile with a two-year piece of research that teaches thesis writing with attention to academic honesty. (Onur, 2011, p.82)

The IB offers a variety of resources and professional development support both online and face-to-face to ensure that the teachers are effective in teaching with the IB philosophy and pedagogy. Some of these training opportunities are a pre-requisite for a school to gain IB accreditation. The initial accreditation of a school is a rigorous preparation that takes approximately two to three years. Thereafter, the school will undergo a self-evaluation process every five years to sustain the accreditation benefits.

In summary IBDP guides students to:

- develop physically, intellectually, emotionally and ethically
- acquire breadth and depth of knowledge and understanding
- develop skills and a positive attitude toward learning that will prepare them for higher education
- make connections across traditional academic disciplines
- explore the nature of knowledge
- undertake in-depth research into an area of interest through the lens of one or more academic disciplines
- enhance their personal and interpersonal development through creativity, action and service (IBO, 2014f).

Turkish Ministry of National Education Programme (MoNEP)

High school in Turkey is called *Lise*. It consists of a four-year program (grades 9 to 12), which became obligatory in 2012 with the advent of the 4 (elementary school) + 4 (middle school) + 4 (high school) system. Students take between 15 to 18 subjects that vary from one to six lessons a week at each grade level. Grades 9 and 10 (as of 2014) are the foundation years with common curricula for all subjects for all students except for just one or two elective subjects. In the last two years of the high school, students have only language, religion and history subjects in common. They choose the rest of their subjects from optional subjects.

Prior to 2010, there were four 'tracks' available: a) science, b) social sciences, c) Turkish literature and mathematics, d) languages, from which students chose in the last two years of the high school (when high school was only three years). The tracking system was removed in 2010 to avoid over-emphasis in one curricular area and to give a more balanced program which now aims to provide a general knowledge and culture base. The IB schools also advocated this change because the IB organization stopped permitting diplomas with three science subjects. However, the Higher Education Council (HEC - in Turkish *YÖK*) has not reflected the change in the national university entrance examinations. For example, the science test includes all three sciences, physics, chemistry and biology, grouped and assessed as one science score, which means that students targeting a science-related area such as engineering or medicine have to take all three subjects at school. As a result, in spite of positive steps taken by the MoNE, efforts for a balanced program will not be effective until the HEC makes the necessary changes.

The impact of the HEC decisions is important because of the competitive nature of the national university entrance examinations in transitioning from secondary education to university. Every year there are more than one and a half million new high school graduates. In 2014 there were 2 086 115 applications including students who were not admitted to universities in previous years. Only 922 275 of these applicants were admitted to university (OSYM, 2014). No other criteria (such as recommendation letters or interviews) are used alongside the national university entrance examinations results as in some other countries. The national university

entrance examinations therefore impact greatly on the school curricula, teaching styles and student motivation, especially in the last two years of high school.

All assessment in MoNEP is internal, and there are no final examinations at the conclusion of the four-year high school program. There is a term-project requirement graded as homework under the supervision of a teacher, and students also take part in an extra-curricular activity of their choosing each year. Students graduate from high school on the results of these internal assessments.

MoNE is the controlling body that decides on establishing a school and ensures its conformity to the national education norms and standards. Private schools make up a small minority, about 4%, of all schools. They too need to conform to the rules and regulations of MoNE, and must obtain the approval of the ministry for any different practices while ensuring that the national conditions are also met. There is no formal accreditation process, repeated every five-years, as in IBDP. With these requirements MoNEP strives to:

- give students a common minimum overall knowledge
- familiarize them with problems of the individual and society, and the ability to seek solutions
- ensure that they gain awareness that can contribute to the socio-economic and cultural development of the country
- prepare them for both higher education and a profession or for life and employment, in line with their interests and aptitudes (MoNE, 2013).

Since 2003, Turkey has taken part in the Organization for Economic Co-operation and Development (OECD)'s PISA tests given to 15 year olds. The Turkish results have been consistently below OECD averages, which acted as a spur for the 2005 education reforms (OECD, 2010). With the new developments in the Turkish education system there have been moves towards:

- incorporation of a constructivist approach focusing on student-centred teaching activities
- encouragement of learning by inquiry and experience
- improvement in diversity in teaching techniques

- enrichment of students' skills rather than transmission of information
- improvement of interaction and cooperation between students in the process of learning
- use of authentic assessment methods and tools (Ayas, Aydın, & Çorlu, 2013)
- use of instructional technologies in learning and teaching activities (Öztürk, 2011).

The above changes began with elementary and middle schools and continued on to the high school level. The impact of globalization and international programs raised awareness that the goal of providing a common minimum knowledge base was no longer sufficient. Different skills were necessary for living in the new century. Some private schools started to offer the IBDP (first in Turkey was 1994) as an add-on program to MoNEP. This created new models and opportunities for high schools in Turkey, and soon other private schools and one public school started to show interest in IBDP.

With the transition to a constructivist approach in Turkish schools in 2005, a need for more emphasis on process, and alternative types of assessment, became apparent. MoNE has been revising the syllabi for all subjects regularly since the 2005 education reforms, and the effect of the IBDP on these changed syllabi are obvious. However, that does not suffice, because retraining teachers and the mismatch between constructivist instruction and multiple-choice assessment of the national university entrance examinations continue as challenges. For high school teachers, it is difficult to resist the pressure of preparing students for these examinations, especially in the absence of final examinations at the end of the high school program.

The outcomes of this study may be used to draw the attention of MoNE to the situation, and the need for assessment in line with the instructional philosophy.

The IBDP in Turkey

The IBDP is offered by some high schools in Turkey and is considered to be a balanced and challenging program. The first IBDP school was authorized in 1994, and in the span of 20 years the number has reached 34 schools (IBO, 2014d). Despite

such popularity, the content of the program has not previously been analysed to determine its alignment with the national curriculum. Given the importance of the high school as preparation for university studies, such an analysis is important in order to investigate the IBDP's relevance and practicality in Turkey.

In the Turkish IBDP schools, in addition to the MoNEP subjects, students take IBDP subjects. If the contents of both are in alignment, there is no problem. If there is discrepancy, approval must be obtained, which is granted upon presenting a program that meets the minimum requirements of MoNEP, and IBDP requirements are added-on. Turkish IBDP schools have been able to cooperate and get approvals by working with each other.

Combining the programs in a meaningful and manageable way requires a lot of creativity on the part of the IBDP schools. One such creative solution was to start offering IBDP one year earlier, in the 10^{th} grade, switching to the November exams held 2.5 years later. Doing the IB at 10^{th} and 11^{th} grades frees up students from November in their senior year, creating time for them to study for the national university entrance examinations held in March and June. Schools starting IBDP a year earlier thus hope to help with student time management by resolving the problem of studying simultaneously for two different examinations held at the same time.

However, the 2014 changes to the MoNEP weekly school schedule announcing that both 9^{th} and 10^{th} grades will be foundation years with a common obligatory program has created an obstacle for starting IBDP in the 10^{th} grade. The IBDP schools will either have to produce a new solution, or give up the idea of the November exam session. In that case, the return of the excessive load and stress on seniors preparing for national university entrance examinations as well as the IBDP may reduce IBDP student numbers in the Turkish IBDP schools.

The extra burden of IBDP removes opportunities for student recreational activities or other responsibilities. Students may have to take additional courses and/or cover the requirements of the same course informed by a different philosophy. For example,

there is a separate course called geometry [1] in MoNEP. In IBDP, geometry is embedded in mathematics. This is an example of the philosophical difference: MoNEP is compartmentalized, while IBDP is holistic and interdisciplinary. When geometry is taught by itself, more topics are covered. However, because they are isolated from their natural use with mathematics, understanding the concepts and applying them to real life situations is difficult. Positively, however, the school may appoint the same teacher to teach both courses, and they can come up with more in-depth class experiences that enhance understanding of the subject.

IBDP students are also at a disadvantage because the amount to be covered cuts into time to prepare for national university entrance exams. While the non-IBDP students attend cram courses and receive additional training in test taking, the IBDP students have limited time to do so. As a result, the scores of the IBDP students on the national university entrance examinations may be lower than they could be. Therefore, it is not surprising that some students and their parents may be inclined to prioritize admission to Turkish university of their choice over earning the IB Diploma.

To make up for such seeming disadvantages, and create motivation for the program, the Turkish IBDP schools, and their informal association, have campaigned with the universities to gain some tangible incentives for completing the IBDP. Some private and non-profit foundation universities that want to attract IBDP graduates grant them scholarships of varying percentages according to their IB Diploma scores, or allow double major and/or internal transfer rights from one faculty to another. Considering the universities preferred by the IBDP graduates this incentive seems to be working well.

With the insight gained from this background information, we will now move on to the next section of this report and look into both programs. This will provide a framework to work from in order to compare the two programs for alignment.

[1] With the recent changes in the MoNEP curriculum revision dated September 2013, the geometry lesson combined into the mathematics curriculum.

Section I: International Baccalaureate Diploma Programme (IBDP) and Ministry of National Education Programme (MoNEP) written curriculum scholastic and non-scholastic alignment

Research questions 1 and 2

1. How does the IBDP written curriculum align with the national curriculum in Turkey in regard to 1) philosophical underpinnings, 2) content and 3) cognitive demand?

2. How do the intended non-scholastic attributes, if any, of international-mindedness, civic-mindedness, engagement, and motivation compare between IBDP and Turkey curriculum documentation?

Methodology

Design of the study

Content analysis (Schreier, 2013) was the method chosen to address research question 1. IBDP and MoNEP curricula and regulations were the documents analysed. Fourteen IBDP and MoNEP teachers from three schools and two cities in Turkey (see Table1) carried out subject specific, detailed analysis of philosophical underpinnings, content and cognitive demand of the following curricula:

a) Turkish (MoNE, 2011e, 2011b)/Language A: Turkish literature (HL) (IBO, 2011b)

b) English (MoNE, 2011c)/Language B: English language (HL) (IBO, 2011a)

c) Biology (MoNE, 2011a)/Biology (SL&HL) (IBO, 2007)

d) Mathematics (MoNE, 2011d)/Mathematics (SL&HL) (IBO, 2012a, 2012b)

Table 1 IBDP and MoNEP teacher's profile

City	Teacher	Subject area	Years of teaching experience	Years of teaching IBDP experience
İzmir	1	Turkish	20	9
İzmir	2	Biology	12	8
İzmir	3	Mathematics	35	9
Ankara	4	Turkish	11	11
Ankara	5	English	14	8
Ankara	6	English	17	4
Ankara	7	English	10	-

Ankara	8	Mathematics	20	6
Ankara	9	Mathematics	21	6
Ankara	10	Biology	5	3
Ankara	11	Biology	6	6
Ankara	12	Biology	5	5
Ankara	13	IBDP coordinator	38	12
Ankara	14	Physics (for the pilot study)	35	12

Teachers used the written curriculum analysis tool in Appendix A for this purpose. A university expert in curriculum studies first checked the tool for content validity. In addition, the tool was then piloted for face validity (Neuendorf, 2002) with three teachers from two schools. Based on their comments and suggestions revisions were made and the tool was finalized. A training and trial session was then held with the teachers involved, to train them in the use of the tool. Experts in each subject area checked the analyses of the teachers. Descriptive statistics of the data produced by the teachers were analysed using Microsoft Excel program.

Research question 1: Instrument and data analysis

For research question 1, the written curriculum analysis tool developed (Appendix A) included the three categories detailed in the first research question (philosophical underpinnings, content, and cognitive demand). The tool consisted of three sections, explained in the following paragraphs, which include a summary of the theory behind our approach to analysing the philosophical underpinnings of the curricula.

Category 1: Philosophical underpinnings

Dewey (2008) said, "Education is the laboratory in which philosophic distinctions become concrete and are tested" (Philosophy of education, para.10). We therefore started our investigation by exploring the similarities and differences between the philosophies of the two programs in order to determine the general framework from which each operates.

The philosophical underpinnings of IBDP and MoNEP gave us a framework to compare the alignment of the two programs and see whether teachers and students are exposed to balanced, complementary ideologies or conflicting ones.

Usually schools do not adopt a single philosophy, they combine various philosophies. This is acceptable since, "All philosophical groups want the same thing of education-that is, they wish to improve the educational process, to enhance the achievement of the learner, to produce better and more productive citizens and to improve society" (Ornstein & Behar-Horenstein, 1999, p.17). They also state that, because of the different views of reality, values and knowledge between philosophical groups, it is difficult to agree on how to achieve these ends (Ornstein & Behar-Horenstein, 1999).

For the philosophical underpinnings**,** we used the curriculum ideologies described by Schiro (2008). He compared four curriculum ideologies, classified as: Scholar Academic, Social Efficiency, Learner Centred and Social Reconstruction. They are briefly summarized below.

- **The Scholar Academics** (SA) advocate "extending the academic disciplines (the world of knowledge and the world of the intellect) by transmitting their essence to students" (Schiro, 2008, p. 39), and providing all learners with equal access to the knowledge thereof. Learners try to build literacy for their discipline emphasizing the fact that "an understanding of one's own culture depends upon a knowledge of other cultures, with which it can be compared and through which we can see what is often taken for granted" (Nelson, Joseph, & Williams, 1993, p.3).
- **Social Efficiency Educators** (SE) believe that knowledge enables people to carry out a task efficiently and scientifically. They believe in objective reality and universality of knowledge, and its capacity to change behaviour. Students are seen as raw material that can be shaped to function well and help to better society. Teachers do this by preparing the learning environment and carrying out the curriculum instructions precisely. Then they supervise and assess the students with standard normative evaluation tools.
- **Learner Centred Educators** (LC) aim to serve growth of all learners by designing experiences from which people can benefit by making meaning. They can then use it to pursue their interests and fulfil their needs. The educators' goal is to help them with it. The educators value the subjective, the inner processes and try to understand the whole person and help with student growth by observing them closely, choosing relevant curriculum materials to

help development. Evaluation is reflective and formative helping the learners to learn from their mistakes.

- **Social Reconstructionists** (SR) aim to reconstruct a better society for the future in providing the material social, cultural and spiritual needs for its members. Knowledge is valuable because it provides the capacity to do this, and the educator's stance, vision, values, convictions and interpretations are transferred onto the students for the future good of the society. Students are evaluated subjectively and holistically taking their social context into consideration.

To be able to discern the underlying ideologies of the two programs (IBDP and MoNEP) being investigated, teachers were asked to differentiate between them by answering the questions in Section 1 of the Written Curriculum Analysis Tool (Appendix A). The questions, adapted from Schiro (2008), address seven different categories, listed below, of the conceptual framework of the SA, SE, LC and SR ideologies. The ideologies were examined in these seven categories:

- Knowledge
- Learning
- Children
- Teaching
- Student evaluation
- Formative curriculum evaluation
- Summative curriculum evaluation.

Teachers were asked to justify their thinking based on the materials provided by the research team. In order to identify the categories in each program and give each a percentage, the teachers used the questions listed under all seven categories. The teachers gave a score (of 1 or 0) for each cell in the table. In addition, they provided examples from each of the two programs, supporting their choice of the dominant ideology by discussing with their peers.

For example in IBDP: one of the Turkish teachers gave a score of 16 for SA throughout the seven categories, and the other gave 20. We took the average of the two scores (18). Then out of the total score (85) allocated to the four philosophical categories (SA, SE, LC and SR), we calculated the percentage (21.2%) for SA category. We applied the same procedures for every subject area in both programs.

Category 2: Content

Content according to topics and sub-topics of the four subject areas were listed for IBDP and MoNEP, taking IBDP as the basis for comparison. We then compared the amount of time allocated to each topic and their sub-topics in order to understand the importance given to each area.

Category 3: Cognitive demand

Wiggens and McTighe (2005) define understanding as multi-dimensional and complicated, having different types and methods of understanding and conceptual overlap with other targets. Because of its complexity, they identified different aspects of understanding (though overlapping and integrated) and developed a six faceted view of what makes up a mature understanding. According to them, when we truly understand, we can explain, interpret, apply, empathize, have perspective and self-knowledge (Wiggins & McTighe, 1998).

This six faceted view of understanding was used to identify criteria for the analytical rubric tool (given in section 3 of the Written Curriculum Analysis Tool - Appendix A), which determined the cognitive demand of the IBDP and MoNEP. The descriptors that move from general to specific reflect the distinguishing characteristics of student work and the curricula. The adjectives listed against each facet are helpful criteria in determining the six facets:

Facet 1: Explained: accurate, coherent, justified, systematic, predictive
Facet 2: Meaningful: insightful, significant, illustrative, illuminating
Facet 3: Effective: efficient, fluent, adaptive, graceful
Facet 4: In-perspective: credible, revealing, insightful, plausible, unusual
Facet 5: Empathic: sensitive, open, receptive, perceptive, tactful

Facet 6: Reflective: self-aware, metacognitive, self-adjusting, wise (Wiggins & McTighe, 2005, p.177).

The reason for our choice of this tool was the emphasis on understanding in the IBDP curricula. For each facet, the rubric reflects a continuum ranked on a 1-5 scale, from naïve understanding (1) to sophisticated understanding (5). The teachers from each subject area selected one curricular unit from grade 11 and one from 12 and scored it on each of the six facets (Explained, Meaningful, Effective, In-perspective, Empathic and Reflective), with a total possible score of 30 per unit. Selecting only one unit per grade is a de-limitation of the study; for feasibility reasons we limited the analysis to one unit and grade. Next, we averaged the scores of each set of subject area teachers for the two units they investigated (grades 11 and 12) to provide one score per facet. For example, the total score for cognitive demand in the IBDP Turkish was 27.75. Table 8 (page 39) gives the list of the six facets with IBDP and MoNEP scores of each.

In addition, the teachers were asked to provide example/s from class applications as a justification of their score.

Research question 2: Data analysis

For the second research question, general IB and MoNE documents and regulations were studied. The categories given were those in the research question: international-mindedness, civic-mindedness, engagement, and motivation. The documents were analysed, and comparative examples given in order to understand the approach of each program.

Findings

The written IBDP curriculum alignment with the national curriculum in Turkey (Research question 1)

The four subject areas compared are:

a) Turkish (MoNEP)/Language A: Turkish literature (HL) (IBDP)

b) English (MoNEP)/Language B: English language (HL) (IBDP)

c) Biology (MoNEP)/Biology (SL&HL) (IBDP)

d) Mathematics (MoNEP)/Mathematics (SL&HL) (IBDP)

1. Philosophical underpinnings

a) Turkish (MoNE, 2011e)/Language A: Turkish literature (IBO, 2011b)

Breakdown for the Turkish programs according to the questions provided in the seven categories used in determining the four philosophies underlying IBDP and MoNEP is shown in Table 2, as percentages.

Table 2 *Breakdown for Turkish/Language A: Turkish literature according to philosophical ideologies*.

	IBDP (%)	**MoNEP (%)**
Scholar Academic	21.2	48.1
Social Efficiency	29.4	29.4
Learner Centred	28.2	10.6
Social Reconstruction	21.2	11.9

IBDP makes a fairly balanced use of the four ideologies, with all scores in the twenties. In the first language area, the mother tongue representing the culture of the students, it is noteworthy to see that SE ideology has the highest percentage of 29.4%. It is believed that knowledge in this area gives students the skills to do things and to contribute to society through their actions. Teachers' strict adherence to the curriculum and supervision and evaluation of students as they learn is balanced and complemented by the next strongest ideology, which is LC (28.2%).

In MoNEP too, the percentage of the SE ideology is exactly the same, 29.4%, probably for the same reasons. However, unlike in IBDP, the highest for MoNEP is the SA philosophy, with 48.1%, surpassing all other ideologies. Characteristic of this philosophy is its didactic and objective nature. The next highest MoNEP philosophy

is SE (29.4%), which also works objectively to induce action in students to function efficiently in society. In a curricular area like language, which also needs to address the subjective, the LC philosophy has the lowest share (10.6%), which would be a weakness for the program, for example in promoting arts and creativity. Here, doing both IBDP and MoNEP in the school could help to lessen this weakness because LC approaches would be supported by the IB program which is stronger in this respect (28.2%).

The following examples provided by a teacher comparing the Turkish literature curricula may help clarify the above percentages :

IBDP Example: LC: She stated:

> All the knowledge acquired by the students is not limited by the scope of the literature discipline only. From time to time it may also transcend into different disciplines such as history, sociology, philology and folklore. With student research, class discussions, and written work, the students may discover or find out new meanings related to that specific piece of knowledge.
>
> Example: Written assignment with all its phases.

MoNEP Example: SA: She stated:

> The knowledge acquired by the student stays within the boundaries of literature discipline and within the framework the curriculum specifies. There is not much scope for interdisciplinary approaches. Generally students are asked to memorize the knowledge. They are asked this knowledge on the examination. The unit ends, examinations are given, grades are awarded. We want the students to remember this knowledge in the national university entrance examinations.
>
> Example: Literary movements in western literature - Realism - brief excerpts from realistic works - one or two questions related with this unit in the examination.

b) English (MoNE, 2011c)/Language B: English language and literature (IBO, 2011a)

Breakdown for English according to the questions provided in the seven categories used in determining the four philosophies underlying IBDP and MoNEP is shown in Table 3, as percentages.

Table 3 *Breakdown for English/Language B: English language and literature according to philosophical ideologies.*

	IBDP (%)	**MoNEP (%)**
Scholar Academic	13.8	38.9
Social Efficiency	22.8	38.9
Learner Centred	36.2	6.8
Social Reconstruction	27.2	15.4

Table 3 shows that the two curricula are very different in their ideology. Schiro's (2008) statement below may help to clarify the difference.

> Educators agree that …..the cultures in which children are brought up influence how and what they learn in school, it does not mean that all educators view the education of children from different cultural, ethnic, and socioeconomic backgrounds in the same way. … they accept that differences in the structure of languages influence how children comprehend…. (p. 192)

Students who have acquired the habits of learning and studying with a curriculum of strong SA philosophy (almost 40% in MoNEP) using didactic methods might have difficulty with the more interactive and understanding-based LC approach of the IBDP language curriculum (36.2% in IBDP, versus 6.8% in MoNEP). LC approaches emphasize meaning-making and understanding. One English teacher mentioned that while reading and writing skills are integrated in IBDP, in MoNEP they are separate, causing students difficulty integrating these skills for use in everyday life. The same teacher says that IBDP students (with more LC approaches) are able to create their own work, whereas MoNEP students (from a more didactic SA background) have difficulty in doing so.

It is also noteworthy that in comparison with the other subject curricula examined, IBDP English has the lowest levels of SA and highest of LC. Accordingly, it is up to the student to understand the texts and be understood. Everyone has their own way of interpreting and expressing texts from the contexts provided. Hence, in IBDP, communication and understanding of own and other cultures, multi-cultural education and international-mindedness is very important. Therefore, importance is given to language education, both the native and other languages. Students will understand others better through communication, and also comprehend and overcome the fear of the unknown, while understanding their own culture by comparison. The IBDP SR English philosophy (27.2%) provides the basis for realizing the IB's goal of "developing a better and more peaceful world through intercultural understanding and respect" (IBO, 2014e).

c) Biology (MoNEP, 2011a)/(IBO, 2007)

Breakdown for biology according to the questions provided in the seven categories used in determining the four philosophies underlying IBDP and MoNEP is shown in Table 4, as percentages.

Table 4 *Breakdown for biology according to philosophical ideologies.*

	IBDP (%)	**MoNEP (%)**
Scholar Academic	19.8	35.9
Social Efficiency	27.1	37.9
Learner Centred	32.8	11.6
Social Reconstruction	20.3	14.6

Table 4 show us that the MoNEP strongly exhibits SA (35.9%) and SE (37.9%) traits. Together they make 73.8%, leaving only 11.6% for LC and 14.6% for SR.

This is explained in an example provided by a biology teacher

> … MoNEP somehow refers to growth and development, but the language used in the 'General Aims of Turkish National Education' is indirect for the student rather than direct. In other words, the program places the teacher in focus, the student is identified as the 'receiver', playing a passive role in the learning process.…. Among the general aims of the MoNE Program… are: raising all

> individuals as people who have a physically, mentally, morally, and emotionally balanced and well developed personality.

Another teacher emphasized the same idea "…MoNEP does not focus on the student as a 'learner', but 'receiver' instead".

As for IBDP percentages, we see a more balanced distribution of these ideological underpinnings. Contrary to the MoNEP, where the SA ideology has a high score of 35.9%, the IBDP stresses personal meaning in the LC ideology (32.8%). The same teacher draws attention to the active involvement of students in their own learning, giving the example below:

> IBDP is Learner Centred. In the IBO Biology Guide 2007, IB Learner Profile section, … adjectives strongly refer to growth and development. These are: … Principled: They take responsibility for their own actions and the consequences that accompany them. Open-minded: They … , and are willing to grow from experience.

LC philosophy is the lowest scoring ideology (14.6%) in MoNEP biology, which may signal problems of alignment and conflict in practice when the two programs are used together as in the Turkish IBDP schools. However, they may also complement each other, creating a more balanced experience for the student. The same could be said for SA which received a low score for IBDP (19.8%) and a high score for MoNEP (35.9%).

d) Mathematics (MoNE, 2011d)/(IBO, 2012a, 2012b)

The breakdown for mathematics according to the questions provided in the seven categories used in determining the four philosophies underlying IBDP and MoNEP is shown in Table 5, as percentages.

Table 5 *Breakdown for mathematics according to philosophical ideologies.*

	IBDP (%)	**MoNEP (%)**
Scholar Academic	19.4	36.9
Social Efficiency	29.7	36.9
Learner Centred	28.6	12.3
Social Reconstruction	22.3	13.8

The IBDP results indicate a more balanced curriculum than the MoNEP, similar to the biology distribution. Again, SE and LC ideologies (close to 60%) are stressed in IBDP. The high percentage of SE in both IBDP and MoNEP is also a sign of the prescriptiveness of the curricula. This is probably one of the reasons why LC score in MoNEP is low (12.3%) and high in IBDP (28.6%).

Mathematics teacher gave clear examples from both programs which help to explain these percentages:

> IBDP example: Applying the knowledge to real life issues like the IBDP internal assessment "exploration", IBDP mathematics curriculum gives importance to the use of mathematics in science and technology and drives students' attention to questions relating to TOK and mathematics.
>
> MoNEP example: The curriculum is designed to give the ability to understand the social and physical environment that surrounds the students, and improve their ability to solve problems in the real world. But when applying the curriculum the knowledge is only given in class by the teacher.

Although both mathematics curricula on paper have comparable idealistic aims, spelling them out as is done in IBDP makes a difference in the results; SR for IBDP is 22.3% and MoNEP 13.8%, which indicate quite a big difference in how they are perceived by the teachers teaching both curricula.

An inner consistency is observed in the MoNEP mathematics curriculum. The ideologies: SA and SE are 36.9%, together making up 73.8%, which was the same total for the MoNEP biology course. However, such consistency does not exist in the language programs, Turkish and English. In MoNEP mathematics too, the LC ideology has the lowest emphasis with 12.3%, while SR gets slightly more: 13.8%. The curriculum seems to be more balanced in IBDP.

On the basis of the analysis of these four subject areas, we can conclude that IBDP makes use of the four ideologies in a more balanced manner than does the MoNEP, as shown in Table 6.

Table 6 *The breakdown of four educational ideologies in IBDP and MoNEP.*

	SA (%)		SE (%)		LC (%)		SR (%)	
	IBDP	**MoNEP**	**IBDP**	**MoNEP**	**IBDP**	**MoNEP**	**IBDP**	**MoNEP**
Turkish	21.2	48.1	29.4	29.4	28.2	10.6	21.2	11.9
English	13.8	38.9	22.8	38.9	36.2	6.8	27.2	15.4
Mathematics	19.4	36.9	29.7	36.9	28.6	12.3	22.3	13.8
Biology	19.8	35.9	27.1	37.9	32.8	11.6	20.3	14.6
Average	18.6	40.0	27.3	35.8	31.5	10.3	22.8	13.9
Average of IBDP and MoNEP	**29.3**		**31.5**		**20.9**		**18.3**	

**Totals may not equal 100% due to rounding.*

Within IBDP the ideologies more emphasized are LC and SE, with LC ranking highest in two curricular areas: English (LC 36.2%) and biology (LC 32.8%). In Turkish (SE 29.4%) and mathematics (SE 29.7%) the SE ideology is used most. The least used ideology in IBDP is consistently the SA in all four subject areas. In MoNEP, there is no balance between these four ideologies. Unlike IBDP, the MoNEP predominant ideology is the didactic one of SA, with scores higher in every subject than those for IBDP. The second MoNEP ideology most apparent is the skills-giving SE, again higher (or the same) in every subject.

The LC ideology (interactive, meaning-making) has the lowest percentage in all four curricular areas of MoNEP, all considerably lower than in IBDP, where LC is the highest scoring ideology. This is a point of disharmony between the two programs that makes alignment in practice difficult. However, from a different point of view, it may be seen as complementary, making up for the weaknesses of one when taught with the other.

On written policy papers and documentation for both sets of curricula, there seems to be emphasis on the SR (better world, intercultural) ideology. Our results show (understandably) that IBDP scores are higher than MoNEP scores.

In conclusion, we could say that IBDP is more student-centred (LC), while MoNEP is more teacher-centred (SA). However, the IBDP's Diploma alone is not accepted as a high school graduation certificate in Turkey. Students targeting Turkish universities therefore need to take a combination curriculum, in which the requirements of

MoNEP not contained in IBDP are added. This of course creates additional work, bringing an extra load to the student, and giving time constraints.

However, when we look at this 'add-on' curriculum and consider both programs taught at the same time, we see that the teachers' analyses of the two together (Table 6) gives a reasonably balanced set of ideologies, while the didactic SE still represents almost one-third.

2. Content

a) Turkish (MoNE, 2011b)/Language A: Turkish literature (IBO, 2011b)

In this curricular area the big difference in approach makes the comparison of content between IBDP and MoNEP difficult.

IBDP is skill-based and the distributions of the four skills are as follows (For chart completed by teachers, see Appendix B).

Speaking: Individual oral presentations and oral commentaries by students.
Writing: Supervised writing, papers and written assignments.
Reading: Novels - whole works.
Listening: Nothing specified.

The MoNEP mandates the teaching of literature (2 hours/week) and language (2 hours/week) separately, contrary to the holistic approach in the IBDP (note that each 'hour' is a lesson period of 40 minutes). The Turkish literature curriculum does not have any common unit with IBDP, so Turkish language curriculum is compared with IBDP Language A: Turkish literature for content.

In MoNEP, literature content is chronological. Literary periods, trends and different genres of Turkish literature are taught on the basis of shorter excerpts, instead of whole, long texts like novels. Speaking is accepted as an inherent part of the program, but how and how much is not spelled out. It is left to the discretion of the teacher completely.

11th grade example: Writing a commentary

In IBDP, 65 hours (60 minutes) of teaching is allocated to written work, focused on 'Commentary Writing'.

In MoNEP, 12 hours (40 minutes) of teaching is allocated to 'Prose Writing - instructive texts - article'. Commentary writing is one of the forms, not the only one. There is much less time allocated on practicing and mastering it, compared to the IBDP curriculum.

This example shows that in IBDP, there is more focus; in-depth attention is given to one topic, so that the student can master the area of focus. In MoNEP, on the contrary, more general information is supplied to students, who are expected to 'memorize/learn' this extensive body of information providing them with a general body of basic culture. They are expected to draw from this foundation when the time comes for production, but not all students can be successful at this because, as passive recipients, they have not practiced the skill actively until mastered.

12th grade example: IBDP allocates 18 hours to the analysis of one poem, Atilla Ilhan's *Sisler Bulvarı* in comparison to 4 hours allocated to a collection of poems called *The Blues.* That shows the detailed approach to understanding by focusing on one piece of work versus building a background of knowledge.

b) English (MoNE, 2011c)/Language B: English language and literature (IBO, 2011a)

IBDP and MoNEP English curricula are so very different that it is difficult to compare them.

In grades 11 and 12, the IBDP curriculum allocates 150 hours (hour: 60 minutes), while MoNEP allocates 144 hours (hour: 40 minutes), about two-thirds of the IBDP (for charts completed by teachers, see Appendix C).

The English IBDP curriculum is divided equally into five topics of 30 hours each (see Appendix C). The MoNEP curriculum is divided into eight topics of 18 hours each. This reflects the same philosophy seen in Turkish: more in-depth inquiry and work on mastering of skills in IBDP, compared to MoNEP's broader yet less in-depth handling

of the subject. So, while IBDP enables the student to actively use the mastered skills, MoNEP does not emphasize mastery, but provides a broader general culture covering more subtopics. However, in the English curriculum document of MoNEP, the four skills are spelled out as:

a) Listening-comprehension
b) Reading-comprehension
c) Speaking
d) Writing.

Comprehension is specified in both listening and reading. It is also stated that students are expected to communicate in the foreign language and gain a positive attitude toward it (MoNE, 2006).

c) Biology (MoNEP, 2011a)/(IBO, 2007)

The number of hours allocated to biology is very different: IBDP 178 hours (in this case hour: 60 minutes), MoNEP 442 hours (in this case hour: 40 minutes). For the chart completed by biology teacher, see Appendix D. The extra hours of MoNEP are partly due to the fact that MoNEP is a four-year program and some topics are introduced in the earlier years.

Example: Physiology

In IBDP this topic is called human health & physiology (37 hours), while in MoNEP it is called animal and human physiology (69 hours). While the IBDP curriculum focuses only on humans, the MoNEP gives a more general framework, including both human and other animal physiology together with comparative anatomy. It also covers the structures and functions of tissues, organs and systems of other organisms. It is more comprehensive, which explains the higher time allocation.

Example: Biotechnology

The IBDP higher level option Microbes and Biotechnology (microbes and the environment, microbes and biotechnology, microbes and food production, microbes and diseases) gives trans-disciplinary topics with real life connections using 21st century skills. It does not exist in MoNEP at 11th and 12th grades, but is covered in grade 9 in less detail. Microbiology and its associated practical work are both interesting and relevant for students. However, the topics need expensive resources to

be taught well. If the technological resources cannot be supplied to all schools in Turkey, it cannot be included in the national university entrance examinations, and is therefore excluded from the curriculum. The same explanation applies to the use of calculators in mathematics.

d) Mathematics (MoNE, 2011d)/(IBO, 2012a, 2012b)

Comparison of units in mathematics is easier than in the languages as the same or similar topics exist in both programs. For the chart completed by mathematics teacher, see Appendix E. However, the amount of time allocated is similar. MoNEP specifies 322 teaching hours of 40 minutes (=12 880 minutes). MoNEP also has a separate subject of geometry[2] (vectors), allocated 28 teaching hours (=1 120 minutes). The total MoNEP mathematics time is almost the same as allocated by IBDP which specifies 242 teaching hours of 60 minutes (=14 520 minutes). The difference is that MoNEP mathematics is spread over four years, Grade 9-12.

Table 7 below summarizes the time allocation for each subject area in both curricula.

Table 7 *The amount of time allocated for IBDP and MoNEP.*

	IBDP (each hour is 60 minutes)	**MoNEP (each hour is 40 minutes)**
Turkish	240*60= 14 400 minutes	122*40= 4 880 minutes[3]
English	150*60=9 000 minutes	144*40=5 760 minutes
Biology	178*60=10 680 minutes	442*40=17 680 minutes
Mathematics	242*60=14 520 minutes	322*40=12 880 minutes + Geometry (Vectors) (28*40=1 120 minutes) =14 000

3. Cognitive demand

The cognitive demand of the four subject areas evaluated on the basis of the framework: Six Facets of Understanding (Wiggins & McTighe, 2005) are listed below (see page 26 for explanation).

[2] With the recent changes in the MoNEP curriculum revision dated September 2013, the geometry lesson combined into the mathematics curriculum.

[3] There is additional Turkish literature subject (122 hours) in MoNEP (which is not counted here) does not have any common content with IBDP.

a) Turkish (MoNE, 2011e)/Language A: Turkish literature (IBO, 2011b)

Table 8 *Analytical breakdown of Turkish/Language A: Turkish literature curricula according to the six facets.*

	IBDP	**MoNEP**
Explained	4.75	1.25
Meaningful	5	2.5
Effective	4.5	1.25
In-perspective	4.5	1.5
Empathic	5	1.75
Reflective	4	1.75
Total	**27.75**	**10**

The cognitive demand for IBDP Turkish is higher than it is in MoNEP. While the MoNEP scores range from 1.25 to 2.5, those for IBDP are from 4 to 5. The biggest difference is in the facet Explained which is 4.75 in IBDP and 1.25 in MoNEP.

Teacher examples for the facet **"**Explained"

IBDP score: 4

"Related with the genre 'commentary' that was studied at the conceptual level, the students write an 'original' and 'well-drafted' commentary using the evidence from the works they read."

MoNEP score: 1

"The student is given the information on the genre 'commentary' quite superficially. Since the students have not had opportunity to delve into the depths of this knowledge, they write an essay in the form of superficial generalizations supported with insufficient evidence."

b) English (MoNE, 2011c)/Language B: English language and literature (IBO, 2011a)

Table 9 *Analytical breakdown of English/Language B: English language and literature curricula according to the six facets.*

	IBDP	**MoNEP**
Explained	3.25	2.75
Meaningful	3.25	2.5
Effective	3.25	2.75
In-perspective	3	2
Empathic	4	1.75
Reflective	3.75	2.75
Total	**20.5**	**14.5**

Again, the cognitive demand for the IBDP (range 3 to 4) is higher than for MoNEP (range 1.75 to 2.75). Compared to the previous subject area (Turkish), the differences in cognitive demand as per the six facets are smaller in the second subject area (English).

Teacher examples from the facet: In-perspective

IBDP score: 3

"Students are required to look at topics from different angles."

MoNEP score: 2

"Students rely on second and third-hand information."

c) Biology (MoNEP, 2011a)/(IBO, 2007)

Table 10 *Analytical breakdown of biology curricula according to the six facets.*

	IBDP	**MoNEP**
Explained	3.5	3
Meaningful	3.75	3.25
Effective	4.25	2.75
In-perspective	2.5	2.25
Empathic	3	4.5
Reflective	1.5	1.5
Total	**18.5**	**17.25**

This is the discipline in which the results of the cognitive demand for both IBDP and MoNEP are closer, showing a discrepancy of one point only. The biggest difference seems to be in 'Effective'.

Teacher examples for the facet "Effective"

IBDP score: 4

"Since students have a deeper knowledge only about the kidney, they could adapt their knowledge in various questions like some containing data from kidney patients."

MoNEP score: 3

"Students do not have a deeper knowledge so they could not answer various questions or problems like they were doctors. They could just answer limited problems."

Teacher examples for the facet **"**Empathic"

IBDP Score: 3

“Students are aware that irregularities in the kidney functioning may result in some diseases like diabetes.”

MoNEP Score: 5

“Students are able to see what dialysis patients experienced, the theory behind it and could read more on their lifestyle.”

d) Mathematics (MoNE, 2011d)/(IBO, 2012a, 2012b)

Table 11 *Analytical breakdown of mathematics curricula according to the six facets.*

	IBDP	**MoNEP**
Explained	4.5	3
Meaningful	4	3.25
Effective	4.25	3.5
In-perspective	3.75	2.5
Empathic	1	0.5
Reflective	3.75	3.5
Total	**21.25**	**16.25**

The cognitive demand for IBDP mathematics is higher than it is in MoNEP. While the MoNEP scores range from 0.5 to 3.5, those for IBDP are from 1 to 4.5. The biggest difference is in the facet Explained which is 4.5 in IBDP and 3 in MoNEP.

Teacher examples from for the facet **“**Effective”

IBDP score: 4

“The students are encouraged to explore the topic and apply it to different situations. Real life problems are solved by using their calculus knowledge such as rate of change of population, marginal cost.”

MoNEP score: 3

“The students mostly practice the skills in solving questions. There is limited use of applications to different situations.”

Non-scholastic attributes in IBDP and Turkish general curriculum documentation (Research question 2)

Before discussing non-scholastic attribute individually, we will look at what the non-academic general statements in the introductory documents of both programs.

As explained in more detail in the ‘Background to the research’ section, IBDP is an international curriculum that was initially designed for international students by an international team of educators. This beginning is continuing with the collaboration of IBDP schools worldwide in all aspects of the school curriculum. IB is known for its rigor, not only in assessing student achievement, but also in regular evaluations of schools to keep standards high. Talk of standards leads one to expect assessment of hard data, however what makes IB programs unique is their idealistic mission to create a better world through education.

As education is often seen as the remedy for many of the problems in the world, expectations from the education provided are very high. There is a striking example of this in the Turkish Ministry of National Education (MoNE) Regulations for Secondary Schools, which is a summary of the basic law of MoNEP. Section One: Student Behaviour and Protection of Students, Rules for students and the expected behaviour reads as follows:

> Article 157 (1) Students are expected to cooperate with the school administration, teachers, counselling service, parent association and all other relevant stakeholders, in order to be raised as people who are devoted to the principles and reforms of Atatürk and his nationalism, as people who identify with, preserve and develop the national, moral, spiritual and cultural values of the Turkish folk, who love their family, country, people and try to praise them, who respect human rights, who are aware of their duties and responsibilities towards the principles of the Republic, that aims to exist as a democratic, secular, social and judicial state, and behave accordingly; are physically, spiritually, morally balanced and healthy, have developed personalities, the power to think independently and scientifically, and a wide world view, and are constructive, creative and efficient people who fulfil their responsibility towards society”. (MoNE, 2013)

This long introductory sentence in Article 1 is followed by Article 2, which has 21 shorter items listing what is expected of the students according to Article 1. Here is an example: “j) They need to have internalized the concepts of human rights and

democracy and turned them into behaviour, and be sensitive to all sorts of bad treatment and abuse" (MoNE, 2013).

The closest equivalent of this sentence in the IB is the Learner Profile (Appendix F), which is made up of ten attributes explained in ten short paragraphs. It is introduced with this sentence: "The aim of all IB Programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world" (IBO, 2014b).

Then the language suddenly shifts into first person plural, 'we'. What is interesting about the IB style is that the use of language is deliberate, and a product of thoughtful work. For example, the switch to 'we' helps the reader take ownership of the message, and the use of short sentences eases comprehension and facilitates its conversion into action. This awareness and sensitivity to the use of language may be the result of working internationally with people from all around the world, for many of whom the three official languages of the IB are a foreign language.

The ten attributes are then followed by a closing statement: "The IB Learner Profile represents ten attributes valued by the IB World Schools. We believe that these attributes and others like them, can help individuals and groups become responsible members of local, national and global communities" (IBO, 2014b).

The Learner Profile is for the use of students and teachers alike, reflecting the philosophy that schools are learning communities and everyone in them are learners alike. In addition, they explain that the learner profile, mission and vision are together a statement of their ideals for education, simplifying and unifying their goals and actions.

> The IB Learner Profile is the IB mission statement translated into a set of learning outcomes for the 21st century. The learner profile provides a long-term vision of education. It is a set of ideals that can inspire, motivate, and focus the work of schools and teachers uniting them in a common purpose. (IBO, 2014b)

In the MoNE Secondary School Regulation Education documents, the vision and mission sections are separate, though succinct. As seen below, the emphasis is on knowledge, which is seen as the key to social welfare. This relates to what the teachers in our study (Research question 1) determined as the underlying principles of MoNEP, the Scholar Academic and Social Efficiency ideologies outweighing the others, an indication that the program meets the vision of MoNEP. There is also mention of national and moral values, but not of international ones. Only the universality of educational principles is mentioned as a guide to the knowledge-based society.

> Our vision is to be an institution that acts as a leader in converting knowledge and skills into social welfare by bringing up generations with national and moral values to achieve change for a knowledge-based society in the light of universal principles of education. (MoNE, 2013)

In the IB this idea of acting as a leader in education is stated as the new strategy: "At its heart lies our ambition to establish IB as a global leader in international education" (IBO, 2014e).

The mission statement of MoNE puts the word manpower into the limelight, drawing attention first to economy for social welfare. It is expected that social development will result from education according to the students' interests and abilities. Again the Social Efficiency ideology is at work, confirming the overall results of our study in Research Question 1. "Our mission is to contribute to the bringing up of manpower that can become the propeller for social development by educating all our youth according to their interests and abilities" (MoNE, 2013).

As seen in the above examples from both programs, and our comparison of philosophical underpinnings, content and cognitive demand in the previous section, the majority of time and attention in school is allocated to scholastic work. Nonetheless, the non-scholastic expectations from students as a result of the education they receive are emphasized, whether it is IBDP or MoNEP. The reason for this may be that, contrary to the fragmented results given by the examination of single subjects, and the grades students get, a person is judged holistically in life.

While evaluating the curriculum documentation, we encountered many value-laden statements, and therefore decided to investigate some non-scholastic attributes in order to gain an overall understanding of each program. In this study, they are considered as intended non-scholastic attributes, because they are mentioned in the documentation of each program. The attributes we have included in our study are specifically international-mindedness, civic-mindedness, engagement and motivation.

Comparison of IBDP and MoNEP in terms of the intended non-scholastic attributes

IBDP

The IB mission statement below is examined for these intended non-scholastic attributes.

> The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.
>
> To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.
>
> These programmes encourage students across the world to become active, compassionate and life-long learners who understand that other people, with their differences, can also be right. (IBO, 2014e)

In the first paragraph, there is the aim of creating a better world, a more peaceful world, and its key is in intercultural understanding, which is concept similar to international-mindedness. There is also the adjective ‘caring’ that defines the kind of young people the IB aims to develop. The expectation from such people is to help create a better world by becoming global citizens. It is assumed that these caring young people will not limit their attention to their own local or country issues, but will be able to do more, go out further, be engaged and motivated to help build peace with their caring, respectful personalities, and their ability to understand other cultures.

In the second paragraph, there is mention of working with international organizations to create international programs. It is helpful to remember the fact that the first IB World Schools were founded to meet the needs of internationally mobile students, whose parents worked for such international organizations. The input and pressure of parents are always a source of motivation in getting such organizations engaged in support of international education. In recent years, many public schools have also decided to offer IBDP and in 2014 they reached 55% of the total (IBO, 2014c).

The third paragraph talks about students across the world, meaning an international body of students, who are encouraged to understand others. This is how international-mindedness can be developed, and it will not be limited to the time students spend in school. Skills such as speaking foreign languages and knowledge of other cultures and the resulting traits, such as empathy, they have acquired through the IBDP will become a habit of mind, and their engagement with civic matters is life-long (IBO, 2014e).

MoNEP

If we turn our attention to MoNEP, we see that paragraph 3 of the Basic Principles of Turkish National Education (in the National Education Law), presented in the paragraphs below, highlights happiness, development of skills, cooperation and in that respect could be said to be similar to the IBDP's mission statement. Actually, the content of the first two paragraphs is almost the same as Article 157 (page 42) from MoNEP, which is from the Regulations for Secondary Schools (Expected Student Behavior).

Basic Principles of Turkish National Education:

1- General Goals:

Article 2 - The general goal of the Turkish national education is to bring up all members of the Turkish people as:

1. (Amended:16/6/1983- art. 2842/1) citizens, who are committed to the principles and reforms of Atatürk, and to the nationalistic ideals of Atatürk as expressed in the Constitution, as people who have internalized the national, moral, human, spiritual and cultural values of the Turkish people, and who love their family and country and always try to direct them, who

are aware of and fulfil their duties and responsibilities towards the Turkish Republic, which is a democratic, secular and social state governed by laws that are founded on human rights and on the tenets in the preamble to the Constitution;

2. constructive, creative and productive individuals, who are physically, mentally, morally, spiritually and emotionally balanced, have a sound personality and character, with the ability to think freely and scientifically and have a broad world-view and respect for human rights, value personality and enterprise, and feel responsibility towards society;
3. happy people, by preparing them for life developing their interests, talents and capabilities, and providing them with the necessary knowledge, skills, attitudes and team-work habits that will help them acquire a career and contribute to the happiness of the society; thus, while increasing the welfare and happiness of Turkish citizens and Turkish society, support and accelerate economic, social and cultural development with national cohesion and unity, and finally make the Turkish nation a constructive, creative and distinguished partner of contemporary civilization. (MoNE, 1973, amended 1983)

The first goal refers to citizenship, and starts with a very clear expression of the intention of bringing up the kind of citizens the program targets, exposing the Social Reconstruction ideology as underlying motivation. It is nationalistic and based on the principles and reforms of the nation's founder, Atatürk.

Such a nationalistic approach could be interpreted as incompatible with the IBDP's international minded philosophy, and would hinder the harmonious alignment of the two programs. However, the IB has chosen to respect the idiosyncratic values of national schools and expresses it explicitly in the mission and strategy statement as: "We promote intercultural understanding and respect, not as an alternative to a sense of cultural and national identity, but as an essential part of life in the 21st Century" (IBO, 2014e).

By taking this stance, the IB works to align national and international values, both in individuals and institutions. This also shows that the coexistence of the national and international is both possible and essential.

In the General goal 1 above, there are more references to civic values and citizenship, such as love of family and country, and encouragement to fulfil one's duties toward the Republic. The type of government to be served is clarified by describing the state as a democratic, secular and social state founded on human rights.

The second goal of the MoNE relates to personal development, motivation and engagement. The characteristics of the Social Efficiency ideology are apparent especially in phrases such as: constructive and productive individuals, and the ability to think scientifically and responsibly towards society, which requires engagement and is also related to civic-mindedness. There is also a sign of the Learner Centred ideology in the phrase 'think freely', while international-mindedness is shown by the phrase: "broad world-view and respect for human rights".

The third goal of MoNE leans more on personal motivation and engagement, with an emphasis on creating happy people. Social Efficiency ideology is at work when talking about skills, attitudes and teamwork habits, acquiring a career and contributing to the happiness of society. Learner Centred ideology is captured by the words: "developing students interests, talents and capabilities and turning them into happy people" (MoNE, 1973, amended 1983).

Finally, the statement of the goals of the Turkish MoNE concludes with a Social Reconstructionist view about constructing a happy society and making the Turkish nation a "constructive, creative and distinguished partner of contemporary civilization" (MoNE, 1973, amended 1983). This shows that there is an understanding of the interdependence of nations and the need to be a part of the international community. The sentence above about contemporary civilization is the concluding remark in the document which shows its importance. The IB mission exhibits a similar understanding by finalizing the statement with the words: "that other people, with their differences, can also be right" (IBO, 2014e).

Non-scholastic attributes in other documents

Apart from these main policy documents, the support for non-scholastic attributes exists in many other forms and places. For example, referring to the second group of scholastic subjects, the reason for learning an additional language is explained as "All IB students learn a second language and the skills to live and work with others internationally - essential for life in the 21st century" (IBO, 2014e). This points to the Social Efficiency ideology applied to international-mindedness. The aim of teaching languages is to enable communication between different cultures and nationalities, facilitating understanding of others, to make living and working internationally possible. The fear of the unknown and foreign can be eliminated and conflicts and misunderstandings may be eradicated. This supports the aim of creating a more peaceful and better world through education (IBO, 2014e).

The same applies to the first language study, and the social sciences. "We encourage international-mindedness in IB students. To do this, we believe that students must first develop an understanding of their own cultural and national identity" (IBO, 2014e). While promoting international-mindedness, assurance is given that there is no intention of over-riding national values, the national culture or identity.

In the Secondary Education Schools Regulation of MoNEP, the goals of secondary schools "is to provide a foreign language education at a level that will enable students to follow the developments and changes in the world" (MoNE, 2013, Article 7 (1) item f). The difference between the goals of IB and MoNE in respect to additional language instruction policy regards the active or passive use of the language. While MoNE's target seems to be more passive: " follow the developments and changes in world" (MoNE, 2013), IB clarifies their intention as "These programmes (IB) encourage students across the world to become active, compassionate and life-long learners" (IBO, 2014e).

IB CORE compared to MoNE applications

Up to this point we have compared the IB and MoNE program documents for the intended non-scholastic attributes of international-mindedness, civic-mindedness, engagement and motivation and presented examples of our findings. In addition, a component unique to the IBDP is he Diploma'core', made up of three elements: the

Extended Essay (EE), Theory of knowledge (TOK) and Creativity-Action-Service (CAS). Together they exemplify how these intended attributes work, and "broaden students' educational experience and challenge them to apply their knowledge and skills" (IBO, 2014e). They are not graded in the same way as the scholastic disciplines, but they are evaluated as graduation requirements.

Extended Essay (EE)

In the MoNEP, the counterpart of EE is called a project. Students do one project every semester, but the emphasis and rigor are not as high as for the EE. Turkish IBDP schools require their diploma candidates to continue with the same project (required for MoNEP) for two school years and turn it into a small-scale research project conforming to the same standards as for the EE.

EE addresses both motivation and engagement as it is designed as a research project in an area of interest to the student. Because the student is supervised minimally, it also engages due to the challenge it creates (Inkelas, Swan, Pretlow, Jones, 2012). By design, it serves as a bridge between the scholastic and non-scholastic components of the IBDP, and would usually include some aspects concerned with international-mindedness and civic-mindedness. Students need to put all the skills they have learned into practice, and their motivation and engagement are essential.

Theory of Knowledge (TOK)

The TOK, a course that emphasizes critical thinking, is another core requirement of the IBDP. Similar to the extended essay, grading in TOK is not done in the same way as for the scholastic subjects. The closest counterpart of TOK in MoNEP is the philosophy course, which however has a different design. The MoNEP philosophy course is a chronological history of philosophy that introduces philosophical terminology and concepts. TOK, on the other hand, makes various interdisciplinary links by means of questioning all concepts including civic and international ones. Therefore, it requires a high level of intellectual engagement by both students and teachers.

Creativity, Action, Service (CAS)

The third core component of IBDP involves experiential and service learning, and links academic learning to real life. Especially in the service strand, activities are designed for enhancing civic-mindedness. There are social activities, including clubs and service activities course (elective) in the MoNEP, too. However, the student ownership and leadership, which effects motivation and engagement, is missing from the MoNEP curriculum. CAS is designed with the whole person in mind. It complements the scholastic work that targets intellectual development with activities in the social, emotional and physical aspects of life to develop balanced individuals.

Section II: Academic performance comparison of IBDP and non-IBDP graduates Research questions 3 and 4

Research question 3. How do scores on the Turkish national university entrance examination compare between IBDP graduates and non-IBDP graduates?

Research question 4. How does university academic performance compare between IBDP graduates and non-IBDP graduates?

a) university cumulative grade point average (*c*GPA)
b) individual subject grades
c) continuation rates
d) graduation rates

Methodology

Participants

A purposive sample of university students was drawn from the four universities which have the largest number of IBDP graduates in Turkey. Three of these were private non-profit foundation universities and one was a public university.

All IBDP graduates from the four universities were included in the study. An equal number of non-IBDP graduates were sampled according to the following matching variables: students studying at the same department at the same university; students graduated from public or private high schools.

Data regarding university cumulative grade point average (*cGPA*), individual subject grades (Turkish, English, mathematics, chemistry and physics), continuation rates, graduation rates and national university entrance examination scores were obtained from the registrar's office at each university.

Subject grades were computed by averaging the scores of the common courses for first and second year undergraduate studies. For instance, the Turkish subject grade was obtained by taking the average of the courses TURK 101 and TURK 102. Further details related to the courses selected are given in Appendix G. It should be noted that the *c*GPA scores in this report also include many other courses.

The total number of students sampled for the study was 761. These were students who enrolled at university between 2009-2013. All participants were Turkish citizens. The age range was 19 to 24 years. Of the total number of participants, 385 were females (50.6%) and 282 were males (37.1%). This does not add up to 100% because some participants did not state their gender. The numbers and percentages of IBDP and non-IBDP graduates are shown in Table 12.

Table 12 *Number of male and female of IBDP and non-IBDP graduates.*

	IBDP graduates		**Non-IBDP graduates**	
Gender	Number	%	Number	%
Female	212	61.1	173	54.1
Male	135	38.9	147	45.9
Total	347		320	

The participants were majoring in various faculties, including engineering and science, social sciences and law, economics. In all four universities the medium of instruction was English and all required students to pass an English proficiency test, or take an intensive English preparation year, before proceeding to first year. Table 13 gives the distribution of IBDP and non-IBDP graduates across the four universities.

Table 13 *Number of IBDP and non-IBDP graduates in the four universities identified.*

	IBDP graduates		**Non-IBDP graduates**	
Name of University	Number	%	Number	%
University 1 (Foundation)	280	72.7	268	71.2
University 2 (Public)	51	13.2	52	13.8
University 3 (Foundation)	38	9.9	40	10.7
University 4 (Foundation)	16	4.2	16	4.3
Total	385		376	

Data

The dependent variables were: the national university entrance examination scores, *c*GPA and individual subject scores' averages (Turkish, English, mathematics, chemistry and physics), continuation and graduation rate. The independent variable was group membership (IBDP/non-IBDP).

A detailed description of data is provided for each variable. Variable names are shown in brackets.

- High school program type: A dichotomous, nominally-scaled dummy variable.
- National university entrance examination scores: University placement of high school graduates is regulated centrally according to student scores in different tests. Students may opt to take one or more of these tests based on the degree programs they intend to apply for. Because the scores are not comparable across tests, it was necessary to limit the analysis. Thus, three variables with the largest sample sizes were created to test whether there was a statistically significant difference between IBDP and non-IBDP graduates. These categories are called TM-1 (test used for admission to faculties of economics), TM-2 (test used for admission to faculties of social sciences and law) and MF-4 (used for admission to faculties of engineering).
- Cumulative grade point average *(cGPA)*: Information regarding participants' most recent cumulative grade point averages were officially supplied by the registrar's office of each university. The *c*GPA score includes grades given for Turkish, English, mathematics, chemistry , physics and all other courses taken by each student.
- Individual subject scores *(Turk.avrg, Eng.avrg, Mat.avrg, Chem.avrg, Phys.avrg)*: Subject scores were measured on a traditional 0 to 4 scale for the core courses taken by first year undergraduate or second year undergraduates: Turkish, English, mathematics, chemistry, and physics courses. The scores used were those of the participants' most recent individual subject scores, officially supplied by the registrar's office of each university.
- Continuation rate: Students' continuation rate is coded 'yes' or 'no'. If students continued to study in the same department in which they first enrolled throughout their undergraduate years, data were coded as 'yes'. If students transferred to another department within the same university, data were coded as 'no'.
- Graduation rate: If students successfully graduated from the university after four years study, data were coded as 'yes'. If students did not graduate at the end of four years, data were coded as 'no'.

Data analysis

Data were analysed using the Statistical Package for the Social Sciences (PASW-SPSS) software version 20 as follows:

- Normality was checked with skewness and kurtosis values across variables. Given that these values were between the range [-1,1], data were assumed to be normal.
- Box-and-whisker graphs were used in order to explore outliers. No outliers were detected.
- Descriptive statistics, including the means and standard deviations, were computed for the test scores.
- Independent samples *t*-tests were conducted to test for mean differences in national university entrance examination scores, *c*GPAs and individual subject scores between IBDP and non-IBDP graduates. All tests were conducted with $\alpha = .05$.
- Homogeneity of variance was checked with Levene's test. Results were displayed by using visual representations, including confidence intervals.
- Effect sizes were estimated with Cohen's *d*. Effect sizes were reported, regardless of whether a statistically significant difference was observed or not, to allow researchers to keep informed on the practical significance of the results.
- Power analysis was conducted only when a statistically non-significant result was observed.

Results

Comparison of IBDP graduates and non-IBDP graduates for their national university entrance examination scores (Research question 3)

Three variables with the largest sample sizes were created to test whether there is a statistically significant difference between IBDP graduates and non-IBDP graduates with regard to the national university entrance examination. These categories were called TM-1 (faculties of economics) and TM-2 (social sciences and law faculties) and MF-4 (engineering faculties). Table 14 shows means and standard deviations of TM-1, TM-2 and MF-4 scores of IBDP and non-IBDP graduates. Minimum score for national university entrance examination is 100 (for some years 195) and the

maximum score is 500. It is changing based on the university and the department that the student enrolled.

Table 14 *Means and standard deviations of university entrance examination scores of IBDP* and non-IBDP graduates.

	IBDP graduates			**Non-IBDP graduates**			
Exam category	**Number**	**Mean**	**Standard deviation**	**Number**	**Mean**	**Standard deviation**	**Cohen's *d***
TM-1	59	380.729	58.61	48	407.652	63.90	-0.45
TM-2	70	418.174	67.01	81	447.976	52.41	-0.5
MF-4	118	465.446	55.24	126	486.805	41.31	-0.44

1) The means of TM-1 scores of IBDP graduates (M = 380.729, SD = 58.61) were found to be statistically significantly lower than the mean scores of non-IBDP graduates (M = 407.652, SD = 63.90): $t(105) = -2.24$, $p < .05$).

2) The means of TM-2 scores of IBDP graduates (M = 418.174, SD = 67.01) were found to be statistically significantly lower than the mean scores of non-IBDP graduates (M = 447.976, SD = 52.41): $t(149) = -3.01$, $p < .05$).

3) The means of MF-4 scores of IBDP graduates (M = 465.446, SD = 55.24) were found to be statistically significantly lower than the mean scores of non-IBDP graduates (M = 486.805, SD = 41.31): $t(242) = -3.40$, $p < .05$).

Post-secondary achievement (Research question 4)

Independent samples *t*-tests were conducted to evaluate the mean differences in variables with regard to the university performance of IBDP and non-IBDP graduates. Secondly, students' university continuation and graduation rates were compared by presenting respective numbers and percentages for IBDP and non-IBDP graduates. Table 15 shows means and standard deviations of *c*GPA and individual subjects selected.

Table 15 *Means and standard deviations of cGPA and the average scores of individual subjects; Turkish, English, mathematics, chemistry and physics.*

	IBDP graduates			Non-IBDP graduates			
	N	**Mean**	**Standard deviation**	**N**	**Mean**	**Standard deviation**	**Cohen's *d***
***c*GPA**	385	3.04*	0.65	376	2.69	0.69	0.52
Turkish	298	3.59	0.73	183	3.24	0.80	
English	385	3.27*	0.46	370	2.58	0.82	1.04
Mathematics	258	2.49	1.06	288	2.32	1.17	
Chemistry	44	2.75	0.78	46	2.44	0.76	
Physics	156	2.54	0.82	150	2.29	0.91	

*significant at .05 level

a) Comparison of IBDP graduates and non-IBDP graduates for *c*GPA:

The means of the most recent *c*GPAs of the IBDP graduates (M = 3.04, SD = 0.65) were found to be statistically significantly higher than the means of the *c*GPAs of the non-IBDP graduates (M = 2.69, SD = 0.69): $t(759) = 7.22$, $p < .05$.

b) Comparison of IBDP graduates and non-IBDP graduates for the means of individual subject scores: Turkish, English, mathematics, chemistry and physics courses

1) Performance in Turkish courses

The mean scores for the Turkish courses taken by IBDP graduates (See Table 15) (M = 3.59, SD = 0.73) were not found to be significantly different from the mean scores of non-IBDP graduates (M = 3.24, SD = 0.80): $t(479) = 5.02$, $p > .05$,.

2) Performance in English courses

The mean scores for the English courses taken by IBDP graduates (M = 3.27, SD = 0.46) was found to be significantly higher than the mean scores of non-IBDP graduates (M = 2.58, SD = 0.82): $t(759) = 13.10$, $p < .05$.

3) Performance in mathematics courses

The mean scores of the mathematics courses taken by IBDP graduates (M = 2.49, SD = 1.06) were not found to be significantly different from the mean scores of non-IBDP graduates (M = 2.32, SD = 1.17): $t(544) = 1.80$, $p > .05$.

4) Performance in chemistry courses

The mean scores of the chemistry courses taken by IBDP graduates (M = 2.75, SD = 0.78) were not found to be significantly higher than the mean scores of non-IBDP graduates (M = 2.44, SD = 0.76): $t(88) = 1.94$, $p > .05$.

5) Performance in physics courses

The mean scores for the physics courses taken by IBDP graduates (M = 2.54, SD = 0.82) were not found to be significantly different from the mean scores of non-IBDP graduates (M = 2.29, SD = 0.91): $t(304) = 2.44$, $p > .05$.

c) Continuation rate

Table 16 shows the university continuation rates (they continue to study in the same department in which they enrolled at the start of their university life) as a percentage of IBDP and non-IBDP graduates.

Table 16 *IBDP graduates and non-IBDP graduates' university continuation rates*

		IBDP graduates (%)	**Non-IBDP graduates (%)**
Continuation rate	**No**	24.9	5.6
	Yes	75.1	94.4
Total		100	100

As shown in Table 16, a quarter of the IBDP graduates transferred to another department within the same university, whereas only 5.6% of the non-IBDP graduates transferred to another department. The difference between the continuation rates of IBDP and non-IBDP graduates shows that the IBDP graduates are more likely to change their department of study. It should be noted that beginning university students are assigned by the exam board to a department based on their national university entrance examination results. IBDP graduates have the option based on their IBDP score and *c*GPAs to change their major to one they prefer.

d) Graduation rate

University graduation rate (successfully graduated from the university after four years of study) is given only for the cohort of 2009 (*N* = 140; 70 IBDP graduate) because the others were still continuing at university at the time of the research. Table 17 shows the graduation rates of IBDP and non-IBDP graduates for the cohort of 2009.

Table 17 *IBDP graduates and non-IBDP graduates' graduation rates (the cohort of 2009).*

		IBDP graduates		Non-IBDP graduates	
		Number	**%**	**Number**	**%**
Graduation rate	**No**	27	38.6	54	77.1
	Yes	43	61.4	16	22.9
Total		70	100	70	100

As shown in Table 17, far more (61.4%) of the IBDP graduate cohort of 2009 successfully graduated from their universities after four years of study, as compared with only 22.9% of non-IBDP graduates. The rest took longer than 4 years to graduate. There was no drop out from the universities for any of the sampled students.

Section III: Perceptions of IBDP and non-IBDP graduates about preparedness for university

Research question 5

5. How do IBDP graduates perceive the IB prepared them for university and how do these perceptions differ between IBDP graduates and non-IBDP graduates?

a) sense of belonging

b) critical thinking

c) academic preparation

d) time management

Methodology

This research question was first explored by an online questionnaire administered to IBDP and non-IBDP graduates of the two universities with the largest number of IBDP graduates. Then focus group discussions were held to triangulate the data (Merriam, 1998). A critical thinking test was administered by the international CEB SHL Talent measurement company.

Participants

In this research question, the volunteering participants (IBDP and non-IBDP graduates) from the two universities with the largest number of IBDP graduates formed the sample. Using the data collection tools given below, we collected data from 81 students. Not all those who replied to the questionnaire attended the critical thinking test and focus group interviews.

Table 18 *IBDP and non-IBDP graduates in the sample for research question 5.*

Instruments	IBDP graduates	Non-IBDP graduates	Total
Online questionnaire	43	38	81
Critical thinking test	39	33	72
Focus group interviews	39	33	72

In this section, the participants' high school program type (IBDP or non-IBDP), gender, university, faculty, age, mothers' and fathers' highest level of education, and mothers' and fathers' occupation are presented to provide an understanding of their background.

Eighty-one graduates responded to the questionnaire. Forty-three (53.1%) of them were IBDP graduates and 38 (46.9%) of them were non-IBDP graduates. Forty-seven of the participants were female. All were Turkish citizens. The age range was between 19 and 24.

Table 19 *IBDP and non-IBDP graduates based on gender.*

	IBDP graduates		Non-IBDP graduates	
Gender	Number	%	Number	%
Male	14	32.6	20	52.6
Female	29	67.4	18	47.4

The distribution of IBDP and non-IBDP graduates across two universities is shown in Table 20. The participants were majoring at various faculties, including the faculties of engineering, science, social science, law, economics.

Table 20 *IBDP and non-IBDP graduates across two universities.*

	IBDP graduates		**Non-IBDP graduates**	
Name of University	Number	%	Number	%
University 1 (Foundation)	38	86	37	100
University 2 (Public)	6	14	0	0
Total	44		37	

Parental education levels were also examined (see Tables 21 and 22). Well over half (60.5%) of the participants' (both IBDP and non-IBDP graduates) mothers were educated to university degree level: 44.4 % (*n*=36). There are five times more mothers with postgraduate degrees in the IBDP group.

Table 21 *Education levels of the mothers of IBDP and non-IBDP graduates.*

	IBDP graduates		**Non-IBDP graduates**	
Mother's education	**Number**	**%**	**Number**	**%**
Primary school	2	4.7	3	7.9
Secondary school	5	11.6	10	26.3
University graduation	26	60.5	23	60.5
Postgraduate degree	10	23.3	2	5.3

Again, there are five times more fathers with postgraduate degree in the IBDP group.

Table 22 *Education levels of the fathers of IBDP and non-IBDP graduates.*

	IBDP graduates		Non-IBDP graduates	
Father's education	**Number**	**%**	**Number**	**%**
Primary school	0		1	2.6
Secondary school	3	7.0	5	13.2
University graduation	21	48.8	28	73.7
Postgraduate degree	19	44.2	4	10.5

Tables 23 and 24 show the distribution of parental occupation of IBDP and non-IBDP graduates.

Table 23 Mother's *occupation*

	IBDP graduates		Non-IBDP graduates	
Mother's occupation	**N**	**%**	**N**	**%**
Housewife	10	23.3.	10	27.0
Retired	6	14.0	6	16.2
Doctor	6	14.0	1	2.7
Teacher	4	9.3	9	24.3
Pharmacist	3	7.0	2	5.4
Engineer	3	7.0	1	2.7
Civil servant	2	4.7	2	5.4
Lawyer	2	4.7	0	0
Private sector (independent business, company owner, publisher)	2	4.7	1	2.7
Academician	2	4.7	0	0
Banker	0	0	1	2.7
Nurse	0	0	2	5.4

Table 24 Father's *occupation*

	IBDP graduates		Non-IBDP graduates	
Father's occupation	**Number**	**%**	**Number**	**%**
Engineer	13	30.2	7	18.9
Doctor	8	18.6	3	8.1
Private sector (independent business, company owner, publisher)	6	14.0	5	13.5
Retired	4	9.3	4	10.8
Officer (including military officer and civil servant)	2	4.7	4	10.8
Teacher	2	4.7	4	10.8

Dentist	2	4.7	0	0
Economist	2	4.7	0	0
Pharmacist	1	2.3	2	5.4
Manager (business manager)	1	2.3	2	5.4
Academician	1	2.3	2	5.4
Banker	1	2.3	0	0
Technician	0	0	2	5.4
Architect	0	0	1	2.7
Security guard	0	0	1	2.7

Instruments

1. Online questionnaire

The questionnaire designed and used for data collection had three sections: demographics, sense of belonging and time management. In the first section, demographic questions were asked to collect student background information. The second section consisted of the Psychological Sense of School Membership Scale (PSSM) (Goodenow, 1993). The third section was the Time Management Questionnaire (TMQ) (Britton & Tesser, 1991). Appendix H shows the survey instrument.

PSSM assesses students' feelings as accepted, respected and valued member of their university. It consists of 18 items on a 5-point Likert-scale (1=strongly disagree to 5=strongly agree). Items 3, 6, 9, 12 and 16 were reverse coded as they were negatively worded. In previous studies, the Cronbach's alpha internal consistency coefficient for this instrument ranged from .77 to .89 (Cheung, 2004; Goodenow, 1993; Sarı, 2012). In this study, the reliability analysis showed a Cronbach's alpha of .86.

TMQ designed by Britton and Tesser (1991) is composed of 18 items. These 18 items are identified as indicators of time management skills. They are classified into three sub-sections: short-range planning (7 items), time attitudes (6 items) and long-range planning (5 items). The items are rated on a 5-point Likert-scale (1=never to 5=always). Items 8, 10, 11, 13 and 16 were reverse coded as they were negatively worded. The Cronbach's alpha was .80 for the whole instrument.

2. Critical Thinking Test

The Critical Thinking Test has three components. The first, VMG1-Verbal Critical Reasoning, measures the ability to evaluate the logic of various kinds of argument. The second, NMG1-Numerical Critical Reasoning, measures the ability to make correct decisions or inferences from numerical or statistical data. Thirdly, DC 3.1-Diagrammatic Series, involves the recognition of logical sequences within a series of diagrams or symbols.

Validity and reliability are important requisites for any statistical analysis (Thompson, 2003). However, the research team did not have access to the raw data collected by CEB SHL company. Thus, the score reliabilities could not be estimated in this study.

According to the technical report, which provides detailed information regarding norms, reliability, validity and equal opportunities related to the Management and Graduate Item Bank (SHL, 2005), Cronbach's alpha coefficients for the two measures used in this study were estimated as .88 and .80 respective to Numerical Critical Reasoning (NMG1) and Verbal Critical Reasoning (VMG1). According to Nunnally (1978), these alpha coefficients indicate an acceptable level of internal consistency. The bivariate correlation between scores obtained from these two tests were estimated as .54, significant at the $p = .01$ level. As evidence of the content validity, technical report claims that the tests were designed with references to the abilities required by many professional and managerial jobs to which graduates aspire. Based on meta-analytic procedures across studies with different populations, the technical report also claimed that both tests predict competency performance ratings in a meaningful way.

3. Focus group interviews

Focus groups interviews are used to obtain participants' perceptions while they interact with each other, rather than with the interviewer, group interaction helping the ideas of the participants to emerge (Cohen, Manion & Morrison, 2007). The interview protocol used in this study consisted of five sections: A. Background of the interviewees, B. Sense of belonging (5 questions), C. Critical thinking skills (3 questions), D. Academic preparation (4 questions), and E. Time management (5 questions). Before interviewing the participants, the questions were piloted with IBDP graduates. Based on the feedback that was gathered, changes were made on two questions.

The focus group interview protocol is presented in Appendix I.

Data collection

After the two universities with the greatest number of IBDP graduates were determined, an e-mail was sent to students of one university through the registrar's office inviting them to volunteer as a participant in this project. For the second university, personal e-mails were sent out for participation. The e-mail included the data collection process and the link to the online questionnaire. This e-mail was also sent to the IBDP coordinators of the schools with a request to share it with their alumni. The online questionnaires were made available for 20 days. We sent the e-mail twice as a reminder to the whole group.

For the critical thinking test and focus group interviews, all of the students who volunteered to take part in the study were contacted and informed about the date (26 February 2014), the venue of the test and the interviews. Seventy-two students were divided into eight focus groups. Four focus groups consisted of IBDP graduates, and four groups of non-IBDP graduates. While half the groups took the critical thinking test, the other had their focus group interviews. The groups were then reversed.

A professional from the CEB SHL company gave the critical thinking test under exam conditions, abiding by the rules and times determined. She collected the papers for data analysis by the same company. The results of the test were delivered to us online. We were not allowed to see the test, nor to reproduce it as an Appendix to this report.

Four experienced researchers and instructors of the university conducted the focus group interviews, as moderators, in Turkish. Each room had an M.A. student as an assistant moderator to help with note taking and recording. A standardization meeting was held before the focus group interviews with the moderators and assistant moderators. Before starting, the participants were asked to fill in Section A of the focus group interview form (see Appendix I), asking for some demographic information. Each focus group interview took approximately 90 minutes.

After the focus group interviews, there were three semi-structured follow-up interviews, two with the assistant moderators and one with the moderators. The focus

group discussions and follow up interviews were audio-recorded, and notes were taken on environmental conditions during the interviews, together with any further moderator observations. Later the data were transcribed verbatim.

Data analysis

1. Online questionnaire

- Demographics included: participants' gender, university, parental education levels, and mother's and father's occupation. Frequencies and percentages are presented in Tables 19-24
- PSSM scale and TMQ: Descriptive statistics, including means and standard deviations, were calculated for PSSM and TMQ scores. Parametric independent samples *t*-test were used with the Statistical Package for Social Science (PASW-SPSS) software version 20 for comparison of IBDP and non-IBDP graduates on PSSM and TMQ scores; mean scores were used.

2. Critical thinking test

Based on the answers provided in each section, comparisons were done by using parametric independent samples *t*-test.

3. Focus group interviews

We followed the common analytic approach for analysing qualitative data (Miles & Huberman, 1994). First we analysed the data and identified some recurrent themes. Then, we generated codes inductively (Strauss & Corbin, 1990). Afterwards, we gathered these codes into categories to give a general idea of emerging themes. After this first-level coding, all the categories from each document were grouped under major themes, which were themselves then grouped into final themes.

Eight focus group interviews were conducted in total; 4 of them with IBDP graduates and 4 of them with non-IBDP graduates. Focus groups were named as A, B, C and D in results and findings. First, the program type (IBDP or non-IBDP) was indicated, and then the name was given. For example, IBDP-A means the first focus group interview for IBDP graduates.

Results

Both quantitative and qualitative results on sense of belonging, critical thinking, academic preparation and time management of the IBDP graduates and non-IBDP graduates are presented below.

a) Sense of belonging

Quantitative results

PSSM data were analysed descriptively, including the mean and standard deviation for the scores of sense of belonging scale for IBDP and non-IBDP graduates (Table 25).

Table 25 *Descriptive statistics of the scores of sense of belonging for IBDP and non-IBDP graduates.*

PSSM average based on program type	Number	Mean	Standard deviation
IBDP graduates	43	3.98	0.54
Non-IBDP graduates	38	3.97	0.52

According to the results, the mean score of sense of belonging of IBDP graduates (M = 3.98, SD = 0.54) was not found to be statistically significantly different from the mean score of non-IBDP graduates (M = 3.97, SD = 0.52, $t(79) = 0.061$, $p > .05$).

Qualitative results

The findings of the focus group interviews on the sense of belonging of IBDP and non-IBDP graduates are listed in Table 26. The results are grouped under three categories: the impact of high school on the university, social life at university, and academic life at university. For each category positive and negative comments are summarized.

Table 26 *Major findings of focus group interviews on sense of belonging of IBDP and non-IBDP graduates.*

	IBDP graduates	Non-IBDP graduates
The impact of high school on the university	**Positive** • easy to adjust • same friends • similar school culture • similar background	**Positive** • variety of high school subjects • flexibility

	Negative • more belonging to high school • long adjustment period • same friends	**Negative** • no impact
Social life at university	**Positive** • activities (clubs) • same friends	**Positive** • activities (clubs, sports, music, drama) • variety of student profile/new friends • time spent at university • proud of campus
	Negative • not accepted by wider community of students • isolated into the IBDP group • prejudice not enough social life	**Negative** • no negative comments
Academic life at university	**Positive** • transfer within departments • skills acquired due to essay writing, lab reports, project preparation, other IB requirements • English proficiency • interaction with the instructor • research options • no additional English preparation year required (as an advantage)	**Positive** • English preparation year as an advantage • years spent at university • instructor interaction
	Negative • insufficient level of courses • peers' level of English and Turkish proficiency	**Negative** • workload • adjustment period to courses

High school impact

IBDP graduates were unanimous in their comments about 'the impact of the high school on the university'. There was great emphasis on the positive effect of having a similar school culture and background at high school for their sense of belonging at university. They commented on the advantages of having similar courses or

assessment in high school which led to a shorter adaptation period at the university. An IBDP graduate in focus group A stated:

> The assignments given and assessed at University 1 are very similar to the ones that we did for IBDP. For example, we did presentations and wrote reports in high school, now we are doing the same assignments for this University.

Further, having friends already in the first year of the university can be perceived both as an advantage or a disadvantage. While having friends helps IBDP graduates to transition from high school to the university, they do not feel accepted by other students who are not coming from the same background. This makes them feel that they belong to their high school more than their university during the period of adjustment.

The perspectives of the non-IBDP graduates on their sense of belonging to the university differ. Some say that the variety of high school subjects had impacted their sense of belonging to the university positively (getting a wider range of courses in high school has helped them to adapt to different styles of courses easily at university). Generally, however, they believe that their high school has no impact on their belonging to the university. Their high school education system was different than the university's system, creating adaptation difficulties for them. A non-IBDP graduate in focus group D said:

> When I came to university, the education system was completely different, because there were no test books to solve or a completely guided course book. For some of the courses there was a textbook, but it was very different than high school textbooks. I had to study by myself. No guidance from the instructors that I had got used to in high school. So in the first years, I had a problem during my academic preparation for the courses. I tried to study by myself, but I realized that I couldn't manage it. Also the assignments were different than high school. The courses were not assessed only by exams as in high school; also presentations and projects were part of the overall grade.

Social life at university

In general, IBDP graduates are pleased with the social life at their university. They mentioned that the club activities in the university are challenging and effective. An IBDP graduate in focus group A stated: "The clubs that I am attending help me to get adjusted to university life by being active and meeting new people". Similarly, non-IBDP graduates are extremely positive when talking about both social and academic life at university. They are satisfied with the social activities such as student clubs, drama, music and sport elective courses. They also mentioned the beauty of the campus as a positive attribute. A non-IBDP graduate in focus group B stated:

> Frankly, for the last two and a half years, I completely feel myself as a part of this university. It is related with taking part in student clubs and activities. These years, I am spending 9 or 10 hours at university even though I am living in the city centre. At first, I was looking forward to go home as soon as possible, now it is like a living area for me. That's why I have a strong sense of belonging to university….Having a beautiful university campus also has an effect on my sense of belonging.

Another non-IBDP graduate in focus group B stated, "It is really like my home. Even though I am living in dormitory, I am stating that I am going home".

Non-IBDP graduates did not have any negative attitude towards the university in terms of social life. However, in terms of academic life, they mentioned the heavy workload in the courses, which lengthens the adjustment period.

b) Critical thinking skills

Quantitative results

The critical thinking test has three different scores: NMG1-Numerical Critical Reasoning scores, VMG1-Verbal Critical Reasoning scores, and DC3.1-Diagrammatic Series scores. Data were analysed descriptively, including the mean and standard deviation for each critical thinking test score separately for IBDP and non-IBDP graduates (See Table 27).

Table 27 *Critical thinking test results for IBDP and non-IBDP graduates.*

	IBDP graduates			Non-IBDP graduates		
	Number	Mean	Standard deviation	Number	Mean	Standard deviation
NMG1	39	18.36	5.48	33	20.18	5.76
VMG1	39	34.46	3.66	33	35.82	4.53
DC3.1	39	28.64	5.20	33	29.70	5.27

NMG1-Numerical Critical Reasoning scores

The NMG1 mean scores of IBDP graduates (M = 18.36, SD = 5.48) were not found to be significantly different from the mean scores of non-IBDP graduates (M = 20.18, SD = 5.76, $t(70) = -1.373$, $p > .05$).

VMG1-Verbal Critical Reasoning scores

The VMG1 mean scores of IBDP graduates (M = 34.46, SD = 3.66) were not found to be significantly different from those of non-IBDP graduates (M = 35.82, SD = 4.53, $t(70) = -1.405$, $p > .05$).

DC3.1-Diagrammatic Series scores

The DC3.1 mean scores of IBDP graduates (M = 28.64, SD = 5.20) were not found to be significantly different from the mean scores of non-IBDP graduates (M = 29.70, SD = 5.27), ($t(70) = -0.852$, $p > .05$).

Qualitative results

The findings of the focus group interviews on critical thinking skills of IBDP and non-IBDP graduates are listed in Table 28 below. The results are given under four categories: the definition of critical thinking skills, impact of high school on the university, social life at university, and academic life at university. For each category, except for the definition of critical thinking skills, positive and negative comments are summarized. In many cases, it can be seen that participants gave a variety of responses that can be clustered under the categories mentioned.

Table 28 *Major findings of focus group interviews on critical thinking skills of IBDP and non-IBDP graduates.*

	IBDP graduates	**Non-IBDP graduates**
The definition of critical thinking skills	• analysis • creativity • finding solutions • questioning • different perspectives/ alternatives • acknowledgement of prejudice	• analysis • values of others' ideas • considering advantages and disadvantages of a situation
The impact of high school on the university	**Positive** • extended essay • TOK • Turkish/English classes (essays) • science exam questions • school culture • additional subjects • holistic curriculum **Negative** • no negative comments	**Positive** • class discussion • depending on the teacher • inquiry **Negative** • curriculum • memorization • exam oriented • no social activities • didactic • *dershane* (cram courses)
Social life at university	**Positive** • no taboos • questioning • movies **Negative** • no negative comments	**Positive** • variety of friends • different perspectives and ideas **Negative** • no negative comments
Academic life at university	**Positive** • no positive comments **Negative** • memorization • not improving critical thinking skills • no evaluation level questions • try to teach critical thinking skills didactically	**Positive** • improves critical thinking skills • in-class discussions • research (technology, internet) **Negative** • no negative comments

Definition of critical thinking

The category 'the definition of critical thinking skills' included key words such as analysis, questioning and creativity. IBDP graduates used more of these words to define critical thinking compared to non-IBDP graduates in the focus groups. IBDP graduates often provided many examples of different kinds of activities they had experienced that helped to improve their critical thinking skills, such as watching and commenting on movies, philosophy courses, debates and discussions, and learning how to write essays. An IBDP graduate in focus group C said: "When we finished high school, we were reading *Waiting for Godot*, *The Metamorphosis* and then interpreting what the author of the book said. So we are really fast critical thinkers". Another IBDP graduate in focus group A stated:

> Simply I love watching movies, I watch them very often. For example, I can see and catch the fine details such as a criticism or an image easily. While my friends are watching the same movie, they do not notice the details, they try to see. I can see the details now … again, for example, there are people who say 'the movie was good, I liked it' and there are people who discuss the movie. I am in the second group.

Some of the non-IBDP graduates stated that reading a book, meeting new people and visiting new places helped them to improve their critical thinking skills. They were not comfortable about defining critical thinking. In focus group B, a non-IBDP graduate, who was in the philosophy department gave a definition, which all the others accepted.

> Now, there is a thought and you will not accept it immediately. First, you will look for the arguments of this thought, and the premises of this thought to reach the conclusion. You will see how acceptable the premises are. Then, you might have a counter argument. This does not mean that you reject the whole argument but you will want to say something opposite, not only 'I don't accept this thought'. You will also substantiate your argument...You will respond to the argument with other arguments, and you will either confirm, 'I also believe it because of these reasons' or 'I'm against it on the following issues because of these reasons' firmly ... within certain frames.

The majority of the IBDP graduates consider themselves to be critical thinkers, whereas non-IBDP graduates do not. In focus group A, one of the IBDP graduates said: “When I have questions in my mind, definitely I ask the instructor several times to explain the things that s/he did not mention before...”. A non-IBDP graduate in focus group A stated, “Personally I perceive/respect someone else's criticism or someone else's thoughts but if my opinion feels right, I insist a lot on it”.

Impact of high school

When asked about the impact of high school on the university education with regard to critical thinking skills, IBDP graduates’ perceptions were very positive. They had no negative comments. Many of them named Theory of Knowledge, Turkish and English as subjects that helped them improve their critical thinking skills. The essays they had written for these subjects and the extended essay process were useful in the preparation of assignments at university. In focus group C, an IBDP graduate explained:

> Thanks to TOK and English courses that I have taken at high school, the English courses in my first year (and even a humanity course in my second year which included 600-800 word assignments) were OK. Some of my classmates had a hard time to complete these assignments, which were very easy for me to complete because of the courses that I took at high school.

The IBDP graduates also mentioned the benefit of science exam questions in this respect:

> None of the physics or mathematics questions we answered in IBDP were solved with formulas directly. You needed to think first, for example, you needed to ask yourself ‘should the uncertainties be included?’ or ‘should I calculate this one?’. I think this part is very different.

The comments of non-IBDP graduates in ‘the impact of high school on the university’ category were a mix of positive and negative, but more inclined toward the negative. Although they provided examples of instances when they did inquiry or class discussions at high school, they said that this was dependent on the teacher. They

highlighted the negative effects of the national university entrance examination which oriented the high school curriculum, and gave difficulties in the use of critical thinking skills at university because of the didactic system at their high schools. Most non-IBDP graduates reported that they had to memorize information to be successful in the national university entrance examination. As an example:

> … in terms of learning, we learned the information in a way that will be asked in the exam instead of discussing it in different ways, I think. That was how it happened for me. Now, it has changed at university, we actually have experienced the gap between high school and university education.

Social life at university

Both IBDP and non-IBDP graduates' comments in the 'social life at university' category were all positive. However, in many cases, the examples they provided were different. IBDP graduates stated that there are no taboos at university meaning they have enough freedom to express themselves or question the ideas of others. Non-IBDP graduates reported that the variety of friends at university help them to see different perspectives:

> ... about this issue I think people are very effective. I do have a wide variety of friends; I currently have roommates who are atheist, feminists or revolutionary. If I were against their thoughts before, I might become more logical. And we discuss, for example a friend who is an atheist makes a joke which may be funny; normally this is against my beliefs. Now, I am more prone to think, so I think meeting people is effective.

Academic life at university

There is a conflict between the perceptions of IBDP and non-IBDP graduates' on the 'academic life at university' category. While the comments of IBDP graduates were all negative, the comments of non-IBDP graduates were all positive. For example, IBDP graduates expressed concern over the lack of assignments to improve critical thinking skills at university. They discussed a variety of factors that fostered these negative feelings. Memorization at university was noted as one such factor. However, non-IBDP graduates spoke positively of the lectures, assignments and research

possibilities at university. They reported their positive experiences with in-class discussions to improve their critical thinking skills.

c) Academic preparation

Qualitative results

The major findings of the focus group interviews on academic preparation for the subject areas of IBDP and non-IBDP graduates are listed in Table 29. The results are presented under three categories: study habits, impact of high school on the university, and academic life at university. For each category except for study habits, positive and negative comments are summarized.

Table 29 *Major findings of focus group interviews on academic preparation of IBDP and non-IBDP graduates*

	IBDP graduates	**Non-IBDP graduates**
Study habits	• last day study as a group • individual study • note taking	• regular study • continuous • review course material • complete assignments • study during exam period • listen well in class • private tutoring • summarize
The impact of high school on the university	**Positive** • acquired critical thinking skills • self-confidence (esp. Turkish/ English/ science) • complete both MoNEP and IBDP • multi-tasking • evaluation • learn how to answer the questions **Negative** • does not help to improve regular study habits	**Positive** • prepared better for mathematics/science • analytical skills **Negative** • didactic • chronological • education system different • Turkish/English not effective (no essays) • training for exams
Academic life at university	**Positive** • intention to get more courses	**Positive** • applied classes at university

	• not working hard to pass • timesaving (similar course materials-novels)	• lots of homework • critical and analytical
	Negative	**Negative**
	• lots of homework	• grade concern

Study habits

Both IBDP and non-IBDP graduates listed their study habits, with non-IBDP graduates providing more examples. Most IBDP graduates said that they study on the last day, but they 'got things done'. An IBDP graduate in focus group B said: "I am a person who does everything at the last minute; I especially do Turkish assignments at the last minute. I write the assignments on the last night and upload at 4.00 in the morning to finish my job".

On the other hand, non-IBDP graduates emphasized the importance of regular study, and regular or continuous study was the most common study habit. Comments were also made about reviewing course material; completing assignments; listening well in class; and summarizing.

When asked where they developed their study habits, IBDP graduates were unanimous in their answers: elementary school and high school. Non-IBDP graduates gave a variety of answers such as personality, family, elementary school, high school or hard-working friends.

The impact of high school

The comments of IBDP graduates on 'the impact of high school on the university' category were mostly positive. They claimed they acquired their critical thinking skills at high school. They reported positive changes in self-confidence; they especially increased confidence in Turkish, English and science. They discussed being part of MoNEP and IBDP at the same time as an advantage; this situation helped to engage in simultaneously occurring tasks. Furthermore, most of the IBDP graduates agreed that they learned how to answer the questions in an ideal way at high school as clarified by an IBDP graduate in focus group A:

> For example, one of the biggest skills we gained in IBDP is to answer a question fully and do this in the clearest and most concise way. This is very beneficial for me in the exams. For example, we write the answers underneath the question, so you should be able to answer the question directly. This is a skill I gained in high school; not high school actually but IBDP.

Non-IBDP graduates' comments on 'the impact of high school on the university' category were mostly negative. They stated that the school education system was didactic and very different from that of the university, which created a challenge for doing well at university. They agreed they were trained for the national university entrance examination instead of university education. Several of them commented that there were not enough learning activities in Turkish and English such as writing essays to help them with university courses. However, in many cases, they later provided examples of opportunities to improve their analytical skills, saying they were better prepared in high school for mathematics and science than for languages and social sciences. A non-IBDP graduate in focus group A stated, "I think the university has shaped my personality more, in terms of learning, I only learned math in high school".

Academic life at university

IBDP graduates were unanimous in the comments they gave on the category 'academic life at university'. They reported they intended to take more courses because they felt that they did not need to study hard to pass, especially during their first year. They stated that these courses are not challenging enough because similar material was covered in high school. An IBDP graduate from focus group A said:

> While selecting the courses and preparing my schedule, I took extra courses instead of having free periods. I have already taken courses from the final year and passed them successfully. During this semester, I would sign up for my 9th course but my mother changed my password, so I could not do it.

As IBDP graduates mentioned 'lots of homework at university' as a negative factor, non-IBDP graduates stated it positively. Non-IBDP graduates perceived having lots of homework as an advantage to improve their academic skills. Homework in the

applied classes at university helped them to refine their practical, critical and analytical skills. A non-IBDP graduate in focus group A said, “Because of regular homework, I studied regularly”. However, they expressed their frustration with the grading system at university. It is clear from the responses that non-IBDP graduates see the benefits of the assignments but they think not all assignments should be graded.

d) Time management

Quantitative analysis

Data were analysed descriptively, including the mean and standard deviation for the results relating to time management questionnaire (TMQ) for IBDP and non-IBDP graduates (See Table 30).

Table 30 *TMQ results for IBDP and non-IBDP graduates.*

TMQ average based on program type	Number	Mean	Standard deviation
IBDP graduates	43	3.06	0.56
Non-IBDP graduates	38	2.92	0.49

The mean TMQ scores of IBDP graduates (M = 3.06, SD = 0.56) were not found to be statistically significantly different from those of non-IBDP graduates (M = 2.92, SD = 0.49): $t(79) = 1.178$, $p > .05$. This result shows that IBDP graduates are slightly better in short-range and long-range planning and attitudes towards time management than non-IBDP graduates.

Qualitative results

The major findings of the focus group interviews on time management perceptions are listed in Table 31 below. The results are given under four categories: the definition and techniques of time management, the impact of high school on the university, social life at university and academic life at university. For each category, except for the definition of time management, positive and negative comments are summarized.

Table 31 *Major findings of focus group interviews on time management perceptions of IBDP and non-IBDP graduates.*

	IBDP graduates	**Non-IBDP graduates**
The definition and techniques of time management	• meet due dates • be calm • be active • organizer/technology usage • prioritization • working in library	• multitasking • using scarce resources efficiently • flexibility • control • balance • planning • prioritization • daily/monthly planning • to do list
The impact of high school on the university	**Positive** • multitasking • crisis management • extended essay • prioritization • individual IBDP subjects **Negative** • not have regular study habits (that causes time management problems) • national university entrance examination	**Positive** • counselling **Negative** • no organizer • no room for self-planning
Social life at university	**Positive** • no positive comments **Negative** • stress • irresponsible friends • very busy • no room for self-planning • traffic jam	**Positive** • responsible friends **Negative** • personal • irresponsible friends
Academic life at university	**Positive** • organized instructors • study better at university • university schedule • attendance requirement **Negative** • no negative comments	**Positive** • no positive comments **Negative** • high/unrealistic expectations • stress • unsuccessful academically • living in dormitory • no room for self-planning

Definition of time management

When they were asked to define time management, nearly all IBDP graduates discussed deadlines. They thought of time management more in terms of meeting due dates, being calm, being active and 'getting things done'. The techniques they used to manage their time were listed as organizers (technology such as applications or calendars on smart phones) and prioritization. A few also said that studying in the library helped to meet the due dates because they could concentrate on their task easily and complete on time.

Most non-IBDP graduates used key words such as flexibility, control, balance, and planning to define time management. There was no complete definition of time management: few non-IBDP graduates discussed it as accomplishing tasks in order of priority, or mentioned multitasking, or using scarce resources efficiently. A few non-IBDP graduates said they plan daily or monthly and make a 'to do list'. Non-IBDP graduates in focus group C gave the following examples: 'the ideal thing in most people's mind … but the thing most people cannot accomplish'; 'the things people cannot fit into their time'; 'I think prioritization should be done correctly'.

The impact of high school

Both IBDP and non-IBDP graduates commented on 'the impact of high school on the university' both positively and negatively. The positive factors for IBDP graduates were the extended essay and individual IBDP subjects; they said these aspects of their high school program helped them to cope with time management. They believe they are good at crisis management and multitasking because they had to finalize many tasks in a limited time. However, some IBDP graduates said they did not gain regular study habits at high school because of the amount of work involved including studying for the national university entrance examination as well as the IBDP exam.

Non-IBDP graduates mentioned the benefits of counselling as the only positive part of their high school program, emphasizing the importance of guidance. One particular student demonstrated this perspective:

> A little earlier I mentioned everything has a deadline and it will be done on the last day, in this style. There is a list of things to do and their deadlines. Up to

> that date, every day is for the thing scheduled and that work will be completed on that day. For that day do not assign something else. My counsellor suggested this technique when I was confused, we developed it together. I am a messy person who cannot keep a planner.

One of the negative factors of the high school program for non-IBDP graduates was the lack of training on time management. They said that they never used any type of organizers in their previous education. They stressed the fact that their time was planned by their teachers or family beforehand, so they never found an opportunity for self-planning.

Social life at university

Comments about the category of 'social life at university' were all negative for IBDP graduates. There were no positive statements. Comments were made about the stress, the busy schedule, and therefore no room for self-planning. Other factors affecting negatively on their time management were irresponsible friends and traffic jams. An IBDP graduate in focus group B said: "I am always very busy … It is more like I don't plan anything, actually in a way everything, in chaos and intensity, is completed on time". Those with cars, who travelled in the rush hour to get to early classes, commented on the volume of traffic.

The comments of non-IBDP graduates' about the category 'social life at university' were both positive and negative. They reported their friendships may or may not help in better time management. Some responsible friends help them to set goals, plan or work on the tasks, but some irresponsible friends waste valuable time.

Academic life at university

IBDP and non-IBDP graduates had quite different perspectives on the last category 'academic life at university'. The comments of IBDP graduates were all positive with no negative comments, whereas those of non-IBDP graduates were all negative with no positive comments. IBDP graduates acknowledged their organized instructors and how helpful they were in improving students' time management to do well academically. The liberty to choose their own schedule helped them to allocate time for extracurricular activities and assignments. The attendance requirement in

university courses also helped them to stick to their timetable. An IBDP graduate in focus group C said: “I am in a program with a small number of students and teachers. For example, the teachers know every student and their problems”.

On the other hand, non-IBDP graduates reported that they are unlikely to be good at time management because of the university’s high and unrealistic expectations. They feel they are unsuccessful academically, especially for the first year of the university; this situation causes a lot of stress and increases poor time management. They have trouble coping with deadlines even those who live on campus. Most non-IBDP graduates try to accomplish the tasks given in a rush, so there is no room for review. A non-IBDP graduate in focus group D stated:

> The difference was at high school I lived in a dorm. It has a certain system you must follow whether you want it or not. The teacher schedules your time. You do the same work on Wednesdays in November and Wednesdays in May.

Discussion, conclusions, and implications

Our first two research questions involved program and curriculum study, trying to align two different curricula. It proved to be a multi-dimensional issue, with both scholastic and non-scholastic aspects. The curriculum study involved document analysis of main policy papers, and analysis of the written curricula by teachers. Our 3rd and 4th research questions involved data from universities related to student entry scores and academic performance. Our 5th research question involved data from student perceptions of their preparation for, and time at, university.

Naturally, the resulting data is complex. It has implications for different stakeholders such as the IBO, the MoNE, the IBDP schools in Turkey, their administrators, teachers, students and parents, universities and may be other educational researchers. The following sections contain a summary of our remarks for each section of this report.

The IBDP curriculum alignment with the national curriculum in Turkey

The two programs compared were designed for different clientele as indicated by the word international in IBDP and national in MoNEP. However, the swift globalization of our times has forced both to change and take other needs into consideration.

The IBDP, specifically designed for international schools in the second half of the 20th century, is now being used by 139 countries and 2580 schools (55% of them are national schools) (IBO, 2014c). IBO states, “The Diploma Program prepares students for effective participation in a rapidly evolving and increasingly global society” (IBO, 2014e).

MoNEP, on the other hand, designed for the children of a new nation state early in the 20th century, has also developed and evolved, showing awareness of the same global interdependence in the mission statement, “constructing a happy society partner of contemporary civilization” (MoNE, 1973).

Examination of written policy papers and documentation indicates goals in line with the social reconstruction (SR) ideology (see Methodology section) such as helping

peace-building (IBDP) and feeling responsibility towards family, country and society and trying to improve themselves (MoNEP). However, analysis by teachers who are familiar with both the IBDP and MoNEP in the four curricular areas chosen, (Turkish, English, biology, mathematics) showed that practices that involved SR ideology were the least obvious in both programs. IBDP shows how to convert abstract concepts into more concrete applications, such as spelling out the values of the IB Learner Profile (Appendix F) and making sure that they are implemented. The core components EE, TOK and CAS are the results of this intention, the actualization of the intended goals.

Philosophical underpinnings

To determine the alignment of these two programs, designed for different purposes but used together in some schools in Turkey, we began by exploring the curriculum ideologies on which each is founded. Understanding the philosophical underpinnings of each program could help us understand if schools using them together are exposed to a balanced program with complementary ideologies, or to conflicting programs. Usually educational institutions employ a variety of practices reflecting different educational philosophies to enhance student benefits and to produce citizens able to contribute to their society.

Our results show that the distribution of the four ideologies (scholar academic -SA, social efficiency-SE, learner centred- LC, and social reconstruction-SR) is more balanced in IBDP than in MONEP. The predominant ideologies in IBDP are the learner-centred LC (31.5%) and skills-based SE (27.3%), whereas in MoNEP they are teacher-centred SA (40%) and again skills-based SE (35.8%). Not much room is therefore left for the other ideologies in MoNEP, only 10.3% for LC and 14.6% for SR. In IBDP, however SA is 18.6% and SR is 22.8% giving a more balanced philosophical approach.

These differences may be taken as evidence of misalignment between IBDP and MoNEP. However, as both are taught together in Turkish schools, the two curricula can be seen as complementary. From this perspective, looking at the combined effect of the two programs for Turkish students who take both, the philosophical underpinnings appear more balanced (Table 6) in both IBDP and MoNEP, the percentage share of the SE ideology, which argues that knowledge gives students the

skills to do things and function efficiently in society, is high at 27.5% and 35.8% respectively, making the resulting convergent or add-on program strong in this respect (31.5%). Similarly (see Table 6) combining the:

- LC ideology which is student-centred for IBDP (31.5%) with MoNEP (10.3%), gives a total of 20.9%
- SA ideology which is academic-based for IBDP (18.9%) with MoNEP (40%) gives a total of 29.3%
- SR ideology, concerned with future society for IBDP (22.8%) with MoNEP (13.9%) gives a total of 18.4%.

An interesting philosophical comparison can be made about English language: MoNEP has high SA (38.9%) and low LC (6.8%) ideologies. IBDP is the opposite, high LC (36.2%) and low SA (13.8%). Academic performance at the university shows that the success rates in English is by far the biggest difference, in favour of the IBDP group. Their English helps to gain exemption from the prep year in English medium universities, and gives advantage reflected in their grades in writing essays and expressing ideas. All focus groups talked about this difference, confirming the language competency of the IBDP group. Of course it is not only the English course at high school, which gives this advantage, but also the fact that all their subjects, lessons and exams, are in English.

Content

Trying to align the two curricula for each subject was not easy. When teachers listed the topics and sub-topics covered in each subject curriculum, and the time allocated to them, the first problem faced was the difference in the duration of the two programs. IBDP is a two-year program for the last two years of high school, whereas MoNEP is a full four-year high school curriculum.

In the IBDP subject areas that we examined, there are fewer topics treated in more depth, giving more time to individual units. Thus, IBDP enables students to master the skills which was seen to help during their university education. In Turkish, the topics and sub-topics are different than in English. One example from English subject is the time and practice allocated for writing free response essays, projects and commentaries during school classes. Focus group response and English university

grades for both IBDP and MoNEP groups show clearly that IBDP graduates have an advantage. The MoNEP biology curriculum is more molecular-based whereas the IBDP biology curriculum deals with the whole organism. Both mathematics curricula cover the same topics, with some exceptions (such as matrices in MoNEP, but not in IBDP).

In the IBDP, there are only six subjects each allocated between four to six hours a week requiring consistent daily attention to prepare for classes which give in-depth treatment using student-centred, inquiry-based methods. As long as the IB Diploma is not accepted as the university entrance certificate by itself in Turkey, students targeting Turkish universities will have to complete those requirements of MoNEP that are not contained in IBDP, as add-on to the IBDP. This brings extra load onto the student, which imposes time constraints in many respects especially with the CAS, EE and TOK.

Cognitive demand

The teachers in this study used the 'Six facets of understanding' rubric (Appendix A) as a tool to determine the cognitive demands of the IBDP and MoNEP.

The results were presented in Section 1c: Cognitive demand for each discipline separately. The overall results out of 30 possible points for the disciplines under study are presented in Table 32.

Table 32 *Overall results of cognitive demand analysis of the disciplines.*

	Turkish	**English**	**Biology**	**Mathematics**	**Total**
IBDP	27.75	20.5	18.5	21.25	88
MoNEP	10	14.5	17.25	16.25	58

The cognitive demand of the IBDP is higher than that of MoNEP in all four subjects studied. Especially in mother tongue, Turkish, the difference is substantial: 17.75. To understand why it may be helpful to remember that the approaches used were very different: IBDP had a skills-based approach, while MoNEP used a chronological one. The reason for our choice of the tool we used is the emphasis given to understanding in IB pedagogy. This brings into question once again the over-emphasis on SA

ideology (48.1% in Turkish MoNEP, in contrast to 21.2% in Turkish IBDP) and the warning by Ornstein and Behar-Horenstein (1999) about the dangers of too much emphasis on one ideology for whatever reason. The two curricula for mathematics and biology are more similar in their cognitive demand.

As a conclusion, the results for our analysis of the philosophical approaches of both programs, show a more equable distribution for IBDP both subject-by-subject and, overall, of the four philosophies we have used as our tool. The difference is student-centred vs. didactic. The content of four subject areas was difficult to align, showing differences in time allocation and topics included. But the cognitive demand by subject, as assessed by our practising teachers, had a higher score for IBDP and, overall a wide difference between the perceived demand of the two programs (88 IBDP vs. 58 MoNEP). We find this result interesting and would like to see it followed up in also other subject areas using both the same tool and another.

Non-scholastic attributes in IBDP and Turkish general curriculum documentation

Comparing the intended non-scholastic attributes of international-mindedness, civic-mindedness, engagement and motivation between IBDP and MoNEP shows considerable overlap as well as some differences. Both IBDP and MoNEP act as educational leaders with an idealistic mission, IB as a global leader to create a better world, MoNEP as a national one, to create a better country through education.

In other words, expectations from both the education provided and the students are high in both programs, while the means or the ways to achieve the goals, differ. Although course syllabi and scholastic work seem to make up and take the majority of educators' time. We should remember that the end product is the person, the learner as a whole, with his/her values as well as knowledge. Therefore, the non-scholastic expectations from students as a result of the education they receive are emphasized, whether it is IBDP or MoNEP.

In our examination of the educational policy papers for both scholastic and non-scholastic attributes, we have presented examples in our results to show that both IBDP and MoNEP align with Dewey's (2008) statement that the goal of education is

not only to develop citizens and workers but also to develop human beings who will live life to the fullest. The MoNE mission wishes to help the development of 'happy people'. The IB's mission sees educating young people as a necessary strategy to motivate and engage them in their own development. Both these recognise increasing interdependence as a result of a globalised society. This does not form a threat to national education systems or national culture or identity. On the contrary, for a balanced existence and the happiness of society, having all these attributes together in education is essential.

Academic performance comparison of IBDP and non-IBDP graduates

The academic performance of IBDP and non-IBDP graduates was compared in terms of national university entrance examination scores, and success later at university according to their *c*GPAs, individual subject grades, continuation and graduation rates.

With regard to the three categories of the national university entrance examination scores used for admission to faculties of social science and law, economics, and engineering, the results showed that non-IBDP graduates were placed in universities with higher scores on average than those of IBDP graduates.

It was certainly surprising to find that there was this difference between the two groups of students who were admitted to the same faculties at the same time. There are, however, two possible reasons for the higher scores of the non-IBDP group. Firstly, one would expect them to be better prepared for the multiple-choice questions of the university entrance exam papers given that non-IBDP graduates are trained in such exams. On the other hand, the IBDP emphasizes many other skills that are aimed at preparing students for university education and life and the program prepares students for a series of quite different exams. Secondly, IBDP graduates have less time to prepare for the national university entrance exam due to the additional requirements of the IBDP program. For instance, they use their time to get prepared for the IBDP exams, the EE, TOK and CAS.

With regard to the performance of these students at the university level, it was interesting to see that the IBDP graduates outperformed non-IBDP graduates in a variety of university level courses, in all the areas examined, with the strongest effect for English. The biggest difference between them was in English, followed by Turkish, chemistry, physics and mathematics. The size of the effect for English courses was over one standard deviation, while it was one half of a standard deviation when their overall *c*GPAs were compared.

Thirdly, IBDP graduates had more opportunity to change their initial decision and transfer to a different faculty or department within their university (24.9% vs. 5.6%). It should be noted that some Turkish universities allow the IBDP graduates to benefit from their good IB diploma scores when assessing their transfer requests from one faculty or department to another. The universities that took part in this study are those preferred by IBDP graduates not only for their quality, but because they are known to facilitate transfer of IBDP graduates between their faculties or departments if they meet a particular *c*GPA requirement. IBDP graduates, aware of their advantage over non-IBDP graduates in this respect, had the option to change their initial decision by transferring to a different faculty or department. They enjoyed the freedom of moving to study in an area they wanted instead of where their national university entrance exam scores placed them, or change their faculty if they found it not to match their interests.

Finally, our research relating to the 2009 entry cohort shows very clearly that far more (nearly three times more, 61.4% vs. 22.9%) of the IBDP graduates completed their university in four years. This result could be attributed to the education, habits of mind, and study/life skills developed in the IBDP. We would wish to see a follow up study of the 2010 and later cohorts in terms of their four year graduation.

Our results lead us therefore to the conclusion that IBDP prepares students better for higher education. We have produced evidence from our quantitative data analysis, both for *c*GPAs and English to show that IBDP graduates perform better compared to the non-IBDP group, even though the national university entrance examination scores of the latter were higher.

Perceptions of IBDP and non-IBDP graduates about preparedness for university

In this final section, the perceptions of IBDP and non-IBDP graduates about their preparedness for academic and social life at the university were the subject of our study. We compared their a) sense of belonging, b) critical thinking skills, c) academic preparation, and d) time management skills. We triangulated the quantitative data obtained through online questionnaires and the critical thinking test with the qualitative data obtained through focus group interviews. Focus groups interviews were helpful in obtaining participants' candid perceptions as they interacted with each other rather than formally with the interviewer.

The four categories (a) to (d) above were looked at in relation to the impact of the high school on the university, social life at university, and academic life at the university.

Quantitative data was analysed for three of the four aspects: sense of belonging, critical thinking skills and time management skills. The difference between the perceptions of IBDP and non-IBDP graduates was not statistically significant. However, qualitative analysis of the data acquired during focus group interviews showed differences between the perceptions of IBDP and non-IBDP graduates.

Below, we summarize our findings and conclude with the implications of each category.

a) Sense of belonging

IBDP Graduates

In category (a) 'sense of belonging', the quantitative results of PSSM scale showed that IBDP graduates have slightly higher scores. According to the qualitative data analysis, IBDP graduates had a more difficult adjustment to university life than their non-IBDP peers. Although academic transitioning to university was easier because of the academic preparation and skills they acquired through IBDP, and because fellow IBDP graduates attended the same university, these very points had a counter effect in respect of their sense of belonging to the university. The same friends, the similarity of the academic system and environment, lacked novelty, challenge and excitement.

They were quick to criticize and resented being in the same class with students who had a different standard of English language competency and different academic skills. Such an attitude did not help in establishing friendly relationships with their non-IBDP graduate peers, with some consequent alienation.

They were also critical of some of their instructors for not challenging them enough or for teaching in a more conventional style. To compensate for the lack of challenge they perceived in academic courses, they tended to take on too many additional courses. These filled up their schedule, not leaving enough time for them to socialize and adapt quickly. All these factors delayed their satisfaction with university life both academically and socially. They started to feel more at home at the university toward the end of the second year, after the two groups became more comfortable with each other and when they had more courses related to their field of interest.

Non-IBDP graduates

In general, the non-IBDP graduates believed that their high school had no impact on their feeling of belonging to the university. The difference between the systems caused adaptation problems. These graduates came from a system with the SA philosophical background, where there was close teacher guidance and surveillance, the textbooks comprised the syllabi, assignments were didactic and assessment was only through exams, into an LC-based system where they had to study independently. This presented problems in the adjustment period.

In spite of their academic difficulties, such as having to work on improving their language skills, the non-IBDP group was more enthusiastic and engaged. They enjoyed the unfamiliar things the university presented. Having new friends and an environment that they found beautiful presented them with new challenges and excitement. In short, change and challenge were big motivational and engaging factors contributing to their sense of belonging.

Implications

Considering the differences in attitudes of the IBDP and non-IBDP graduates universities should think of some measures to help both groups in the adjustment period. Universities are usually quick to give remedial help, but leave those who have

come more equipped on their own. This may also partly cause problems of continuity in the initial years. In focus group interviews, there were examples of some who had lost time because they had adjustment problems and tried to discover what they really wanted to study and where they belonged. It was mentioned that counselling was the most helpful aspect of high school. In the transition period at the university counselling should be provided.

Other scholastic and non-scholastic solutions may be possible. Examples may be the introduction of advanced courses in English or choices of electives, to present the IBDP graduates with higher challenge and create opportunities to widen their horizons. Orientation activities could help the two groups mingle earlier. CAS type of activities, peer help, counselling or advising systems may also be strategies universities could offer to boost student sense of belonging and help them engage more positively with their university work.

b) Critical thinking skills

The quantitative results of the three different tests NMG1-Numerical Critical Reasoning scores, VMG1-Verbal Critical Reasoning scores, and DC3.1-Diagrammatic Series that were analysed separately for IBDP and non-IBDP graduates did not show any meaningful difference between them. IBDP graduates had slightly lower scores on measures of critical thinking skills, but in the focus groups they revealed a greater awareness of critical thinking than did the non-IBDP graduates.

The qualitative analysis of the focus group interviews on critical thinking skills of IBDP and non-IBDP graduates was classified into four categories: definition of critical thinking skills, impact of high school on the university, social life at university, and academic life at university.

IBDP graduates

IBDP graduates used words such as analysis, questioning and creativity to define critical thinking. They also provided examples of activities they had experienced in high-school which helped them improve their critical thinking skills. Watching movies and then commenting on them, debates, discussions and learning how to write

essays were among these practices. The majority of the IBDP graduates considered themselves to be critical thinkers, and stated that they were comfortable about asking their instructors questions for in-depth analysis.

IBDP graduates' perceptions were positive about the impact of their high school education on university education with regard to critical thinking skills and had no negative comments. Positive comments included examples such as TOK, Turkish and English subjects together with the essays they had written for these subjects and the EE course. Science exam questions were considered useful, both in improving their critical thinking skills and preparing them for university assignments.

Their comments on 'social life at university' were positive, because university provided a free environment to express their ideas and question the ideas of others.

IBDP graduates' perceptions on 'academic life at university' were negative. They discussed a variety of factors that fostered their negative feelings, such as concern over the lack of critical thinking assignments and lessons that required memorization. The IBDP graduates were active in expressing themselves and questioning.

Non-IBDP graduates

Non-IBDP graduates were not comfortable about stating a definition of critical thinking. They accepted a definition given by one of them without much questioning. With regard to critical thinking at school, the non-IBDP graduates provided examples of different activities they had experienced at high-school such as reading a book, meeting new people and visiting new places but, unlike the IBDP graduates, there was no mention of any further discussion or process related to these examples.

The comments of non-IBDP graduates about the impact of high school on the university were generally negative. In particular, they commented on the effects of the national university entrance examination which strongly oriented high school curriculum, and which required memorization of information. They mentioned a gap between what is learned at high-school, and what is needed at university, noting that

the didactic system at their high schools caused difficulties in the use of critical thinking skills at university.

With regard to social and academic life at university, non-IBDP graduates reported that friends at the university helped them see a variety of perspectives, and their comments related to academic life at university were all positive. They spoke positively of the lectures, assignments and research possibilities, as well as reporting good experiences with in-class discussions and improving their critical thinking skills.

Implications

The IBDP group, full of enthusiastic criticism, seems to be in need of some direction to use their energy positively. The non-IBDP group could also benefit from some direction and activities (such as discussion groups) to open up their horizons and loosen their self-control in a supportive environment. By becoming skilled at critical thinking, they can make more use of their creative potential. They could benefit from some mentoring from academic staff or students.

c) Academic preparation

IBDP graduates

IBDP graduates are at advantage compared to the non-IBDP group in academic preparation because they followed in high school a program based on LC ideology. They had opportunities to process information themselves, and enough time to practice their academic skills until they became as new competencies. This was most apparent in the two language courses, Turkish and English. IBDP graduates were ready for the essay-type, free response, university assignments that the other group found difficult. In the focus groups they appreciated the science experiments, report writing, and learning to answer questions clearly and concisely as they had already had experience. Being used to advanced technology, for example calculators and computers, gave the IBDP group another advantage.

The only complaint IBDP graduates had was lack of regular study habits due to the overload of managing two programs together at high school leading to last minute study. However, they even said it made them more resilient, learning about crisis

management and multi-tasking., which made them more self-confident about being able to get things done. Being used to the challenge of overload, they tended to take extra courses in addition to the normal program load of the university.

Non-IBDP graduates

Non-IBDP graduates did not appreciate their high school preparation for the university in the languages, but were happy with their preparation in mathematics and science. Even in those subjects, however they all agreed that they were taught with a didactic approach to the test (university entrance examinations) rather than for university education. This created adjustment problems when they started university, and they had to learn new skills as well as re-learn some habits.

On the positive side, they had acquired regular study habits at school, like listening well, reviewing course material, summarizing, and completing assignments on time, all of which helped them to succeed. Unlike the IBDP graduates, they appreciated having regular homework and believed homework was helpful to refine their skills.

Implications

There are implications for MoNE in respect of the overuse of SA ideology principles such as didactic methods and teaching to the test, which do not prepare students to succeed at university.

Language teaching, both first language and second language with SA-based methodology is not effective, especially for those universities teaching in English. The efficiency of the LC-based methods is demonstrated by the success of IBDP graduates at these universities. These can be taken into consideration in revising language programs for secondary education in Turkey.

Universities, especially those that have a reasonably larger IBDP graduate population and those trying to attract more IB graduates, should consider offering challenging courses or granting credits for IB Higher Level courses in the first year.

d) Time management

The TMQ scores of both IBDP and non-IBDP graduates as a test of their time management skills showed no meaningful difference. Their scores were very close, 3.06 and 2.92, although indicating room for improvement as they were scored out of 5. The qualitative focus group interviews were in concord with this result. Participants of both groups responded similarly to the questions and neither group came up with a complete definition of time management.

IBDP graduates

IBDP graduates are more aware of the deadline concept because they have a lot of experience from a process requiring long-term assignments, and consequences when deadlines are not met. Dealing with the overload of fulfilling the requirements of both programs was also reflected in the discussions, where students repeated the need to be calm, get things done, manage crisis situations. They had experience with using organizers (and smart phone calendars) because of the need to keep all the deadlines imposed on them under control. They needed to use prioritization techniques to prevent possible overlapping of IBDP and MoNEP requirements. Because of their better academic preparation for university education, IBDP graduates tend to manage their time better and are able to benefit from university life both academically and socially.

Non-IBDP graduates

The deadline concept was not familiar to the non-IBDP group: they were not used to having assignments with long due dates in high school. They were used to having teachers and school administrators who planned their program. In addition, the cram courses they attended at weekends to prepare for the university entrance examinations did not leave much time to plan. They did not have much personal control over their time in the last two years of high school. In the absence of time management training, some school counsellors try to impose the use of ‘to do lists’, and guide them for planning their time, but there are not enough school counsellors at high schools to do this comprehensively. Although they are hard-working students, insufficient academic preparation for university education took its toll on them, especially in the first years of the university. Trying to cope with the expectations caused panic and made time planning almost impossible, affecting their success negatively.

Implications

Parents and school administrators should be aware of the need to give responsibility and room for managing their own time to high school students, accompanied by guidance and tools such as organizers. This is a life skill and training for it needs to start early in school life so that when entering university students are prepared to take on bigger challenges.

Curriculum planners, be it MoNE, school administrations or university provosts need to be wary of the fact that students are in need of improving their time management skills, and guidance should be given to students in this direction. IBDP examples of due dates, responsibility giving and severe consequences for failing to meet deadlines may be adopted or adapted.

In conclusion, the detailed perceptions of the two groups of students can be summarized as follows:

- The non-IBDP graduates had a more positive sense of belonging to the university from the start, attributed by them to the new challenges and opportunities presented which engaged and motivated them; the IBDP graduates had experienced a similar teaching approach in high school and did not feel challenged enough in the first year at university.
- The non-IBDP group showed less of questioning, critical thinking attitude than IBDP graduates.
- In terms of academic preparation both groups had valuable study habits from high school, but the more skills-based IBDP programme with its emphasis on critical thinking and oral expression, prepared the IBDP graduates well for success at university. Those IBDP graduates studying in English at their university were at a particular advantage since they are experienced in writing essays and reports in English in high school.
- Both groups shared that they needed to improve their time management skills although IBDP graduates, with their greater experience of long-term deadlines, exhibited more confidence about accomplishing assignments in a timely manner.

The data we analysed help to explain the difference in the performance of the two groups, and leads to the conclusion that the education received at high school plays an important role on how a student can use his or her potential at university. Our results suggest that IBDP education helps students activate their potential and convert it into competencies, which enable them to succeed better at university when compared to the non-IBDP graduates.

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Appendix A: Written curriculum analysis tool

Bilkent University Graduate School of Education

Written Curriculum Analysis Tool

11/13/2013

Special thanks to Mustafa Üstünışık, Ünal Özmen and Sıla Sagun for their feedback

Directions for the curriculum reviewer

The document is composed of **3 sections** that will help you to review and compare/contrast the written curricula of the International Baccalaureate (IB) DP and the Ministry of National Education (MoNE) program.

Section 1: Philosophical underpinnings (Whole curriculum)

Answer the questions that are given in Table 1.1-1.6 based on the whole of the IBDP and the MoNE programs. Provide **examples** from the general overview of the respective program giving a reference for each answer supporting your selection based on dominant ideology.

Section 2: Comparison of content (Topic-based)

Fill in Table 2 according to the written curricula. The **topics** and **subtopics** will be filled including **the hours of teaching** for each sub-topic for both programs ('Hour': 1 lesson of about 40 minutes).

Section 3: Cognitive demand (Topic-based)

Table 3 will be completed for **each complete unit** with some **example/s** supporting the selection, written in the corresponding box. The definitions for each category can be found in **Appendix A**. This is a rubric that has 6 categories, Explained, Meaningful, Effective, In-perspective, Empathic and Reflective. Each category has five levels in descending order (5-1), and you are asked to fill in Table 3 by giving a score for each category. You will choose **only one level** and put the score in the corresponding box. Then you will provide example/s from the respective curricula (What kind of student will this program develop?).

Section 1: Philosophical underpinnings

Table 1.1. A comparison of ideology regarding knowledge.

Knowledge	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
The nature of knowledge is . . .	didactic statements	capabilities for action	personal meanings	intelligence and a moral stance
Knowledge gives the ability . . .	to understand	to do	to actualize oneself	to interpret, act on, and reconstruct society
The source of knowledge is . . .	objective reality as interpreted by the academic disciplines	normative objective reality as socially interpreted	individuals' personal creative response to experience	individuals' interpretation of society's past, present, and future
Knowledge derives its authority from . . .	the academic disciplines	its ability to perpetuate society through skills provided to its members	the meaning it has to its possessor	individuals' visions of the future good society
The truth of knowledge is verified by...	finding the degree to which it reflects the essence of an academic discipline	seeing if it corresponds to society's view of the nature of empirical reality	the personal insights of its possessor	individuals' beliefs in its ability to improve society

Example –IBDP: **Example- MoNE:**

Table 1.2. A comparison of the ideology regarding learning.

Learning	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
Is learning viewed from the perspective of the receiver or the transmitter?	Transmitter	Transmitter	Receiver	Transmitter
Is learning seen primarily as a function of natural growth or as a function of societal transmission?	Transmission	Transmission	Growth	Transmission
Is learning an integrated or an atomistic process?	Atomistic	Atomistic	Integrated	Integrated
Is learning viewed as changing primarily mind or behaviour?	Mind	Behaviour	Mind	Mind
Is the desired result of learning a change of mind or a change in behaviour?	Mind	Behaviour	Mind	Behaviour
Is the primary actor during learning the learner or another agent?	Agent	Agent/learner	Learner	Agent/learner
Is there a concern for formal learning theory? (What type?)	No (discipline)	Yes (behaviourism)	Yes (developmental and constructivist)	Yes (social constructivist)
How is the issue of readiness addressed?	By simplification of difficult topics	By providing prerequisite behavioural capabilities	Stages of growth	Gestalts of prior experience
How is the issue of individualized instruction handled?	It is ignored (children are grouped in terms of achievement)	By providing a standard task for all and varying learning rates and styles	By facilitating individual development	By using individual interests to mold a consensus

Example-IBDP: **Example-MoNE:**

Table 1.3. A comparison of the ideology regarding children.

Children	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
Are children treated as active or passive agents in their world?	Passive	Active	Active	Active
Are children viewed as having or missing something of worth?	Missing	Missing	Having	Having
Are educators concerned about processes internal or external to children?	Internal	External	Internal	External
Are educators focused primarily on children's minds or their behaviour?	Mind	Behaviour	Mind	Behaviour
Are children viewed as integrated organisms or as atomizable organisms?	Atomizable	Atomizable	Integrated	Integrated
Do educators focus their efforts on children themselves or on the acts or attributes of children?	Attributes	Attributes	Children themselves	Attributes
Are educators concerned about children as they are or as they ought to be?	As they ought to be	As they ought to be	As they are	As they ought to be
Are children thought to exist for themselves or to further ends external to themselves?	For external ends	For external ends	For themselves	For external ends
Are children viewed as unique individuals or in relation to standardized norms?	Norms	Norms	Individuals	Norms
Are children viewed in a social context (and if so, what type?) or outside of a social context?	In the context of the discipline	In the context of the present society	Out of context	In the context of the future society

Example-IBDP: **Example- MoNE:**

Table 1.4. A comparison of the ideology regarding teaching.

Teaching	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
What is the teacher's role during instruction?	Transmitter	Manager	Facilitator	Colleague
Are teachers transmitters of knowledge or preparers and supervisors of classrooms?	Transmitters	Preparers and supervisors	Preparers and supervisors	Preparers and supervisors
What standards are used to measure teacher effectiveness?	Accurate presentation of the discipline	Efficiency of student learning	Facilitation of child growth	Effective transference of the vision
Are teachers to stimulate student diversity or uniformity?	Uniformity	Uniformity	Diversity	Uniformity
Are teachers to directly implement curricula unchanged or creatively adapt curricula to their situations?	Directly implement	Directly implement	Adapt (based on children's needs)	Adapt (based on social concerns)
Do teachers or developers plan for children's individual differences?	Neither	Teacher	Both	Teacher
What types of media are usually employed during teaching?	Didactic discourse	Programmed instruction	Child-environment interaction	Group dynamics
What is the intent of teaching?	To advance students in a discipline	To prepare children to perform skills	To stimulate child growth	To acculturate students into the educators' vision
Are teachers to be concerned about the whole child? (If not, what aspect of the child should they be concerned about?)	No (cognitive)	No (skills)	Whole child	Whole child
Are teachers' attitudes, beliefs, and visions considered important?	No	No	Yes	Yes
Are teachers expected to do classroom research?	No	No	Yes	Yes

Example-IBDP: **Example-MoNE:**

Table 1.5. A comparison of the ideology regarding student evaluation.

Student Evaluation	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
What is the purpose of student evaluation for the evaluator?	To rank evaluees for a future in the discipline	To certify to a client that a student has certain skills	To diagnose student abilities to facilitate growth	To measure student progress with respect to ability
What is the purpose of student evaluation for the evaluee?	To test ability to represent what has been transmitted	To test ability to perform a specific task	To reflect to evaluees their progress	To allow students to demonstrate their values to others
Is designing assessment part of curriculum development?	No	Yes	No	No
What is the nature of evaluative instruments?	Norm reinforced	Criterion reinforced	Informal, subjective, diagnosis	Informal, subjective, diagnosis
Are assessments subjective or objective?	Objective	Objective	Subjective	Subjective
Is evaluation atomistic or holistic?	Atomistic	Atomistic	Holistic	Holistic
Who gets or benefits from the results of student evaluation?	Academic disciplines (academicians, administrators)	Educators' client (society, parents, administrators)	Child	Teacher
During evaluation, is the focus on the individual, group norms, or a fixed criterion?	Group norms	Criterion	Individual	Individual with respect to criterion
Are students evaluated during or after instruction?	After	After	During	During
When are criteria for good student work defined?	After evaluation	Before evaluation	Never	Never

Example-IBDP: **Example-MoNE:**

Table 1.6. A comparison of the ideology regarding formative curriculum evaluation.

Formative Curriculum Evaluation	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
Is formative evaluation engaged in?	Yes	Yes	Yes	No
Why formative evaluation is considered important?	To ensure that curriculum reflects its discipline and is teachable	To ensure conformity to scientific procedures and to demonstrate accountability	To allow the best curricula to be designed	
Is accountability a central issue? If yes, accountability to whom?	Yes, to the discipline	Yes, to the client	Yes, to educators	
Are subjective or objective instruments used?	Subjective teacher and scholar reports	Objective	Subjective, educator observations	
When are the norms for evaluation determined?	After evaluation	Before evaluation	During evaluation	
Is evaluation primarily atomistic or holistic?	Holistic	Atomistic	Holistic	
What type of information does evaluation provide?	Binary ("OK" or "needs revision")	Binary ("OK" or "needs revision")	Data regarding what to improve and how to do so	
What methods and criteria are used to determine a curriculum's success?	Logical analysis by scholars and teacher reports on teachability	Objective criterion-referenced data on student achievement	Observational data on student interest and growth	

Example-IBDP: **Example-MoNE:**

Table 1.7. A comparison of the ideology regarding summative curriculum evaluation.

Summative Curriculum Evaluation	**Scholar Academic**	**Social Efficiency**	**Learner Centred**	**Social Reconstruction**
Is summative evaluation engaged in?	Yes (necessary but not important)	Yes	No	No
Why is summative evaluation considered important?	To sell curriculum	To ensure conformity to scientific procedures and to demonstrate accountability		
Are subjective or objective instruments used?	Objective	Objective		
Is accountability a central issue?	No (to the discipline)	Yes (to the client)		

Example-IBDP: **Example-MoNE:**

Revised and adapted from Schiro (2008). *Curriculum theory. Conflicting visions and enduring concerns*. Sage publications: UK.

Section2: Comparison of content (Topic-based)

Table 2. A comparison of topics and subtopics of a unit including hours of teaching.

Topic	IBDP	Hours of teaching	MoNE	Hours of teaching
1.				

Section 3: Cognitive demand (Topic-based)

Table 3. Six facets of learning (Appendix A attached gives the rubric)

	Score (5-1) IBDP	Example (IB)	Score (5-1) MoNE	Example (MoNE)
Explained				
Meaningful				

Effective				
In Perspective				
Empathic				
Reflective				

*Please copy and paste this page for each unit of the program.

Appendix A

[A rubric for evaluating student outcomes for every unit by the IBDP/MoNE program]

[IBDP/MoNE programıyla yetiştirilen öğrencilerin ürünlerinin ünite bazında değerlendirilmesi için derecelendirilmiş ölçek]

Score	**Explained** **Açıklanmış**	**Meaningful** **Anlamlı**	**Effective** **Etkin**	**In Perspective** **Bakış açısı olan**	**Empathic** **Empatik (Anlayışlı)**	**Reflective** **Derinlikli düşünceye sahip (felsefi)**
5	Sophisticated and Comprehensive: an unusually thorough, elegant, or inventive account (model, theory, explanation); fully supported, verified, justified; deep and broad; goes well beyond the information given Sofistike ve kapsamlı: tam olarak, mükemmel ya da yaratıcı	Insightful: a powerful and illuminating inter-pretation or analysis of the importance, meaning, significance; tells a rich and insightful story; provides a revealing history or context Vakıf: konunun önemi iyi anlaşılmış ve güçlü bir analizle yorumlanmış;	Masterful: Fluent, flexible, efficient, able to use knowledge and skill and adjust understandings well in diverse and difficult contexts—masterful ability to transfer Ustalık sahibi: Akıcı, esnek, etkin, bilgi ve becerileri kullanan, çıkarsamaları zor ve farklı içeriklere uyarlayabilen-	Insightful and Coherent: a thoughtful and circumspect viewpoint; effectively critiques, encompasses other plausible perspectives; takes a long and dispassionate critical view of the issues involved Vakıf ve tutarlı: Dikkatli ve iyi düşünülmüş bir bakış açısı; etkin bir eleştiri	Mature: disciplined; disposed and able to see and feel what others see and feel; unusually open to and willing to seek out the odd, alien, or different; able to make sense of texts, experiences, events that seem weird to others Olgun: disiplinli; başkalarının duygu ve düşüncelerini anlayabilen,	Wise: deeply aware of the boundaries of own and others' understand-ing; able to recognize own prejudices and projections; has integrity— able and willing to act on understanding Bilge: kendi ve başkalarının anlama kapasitesini sınırlarının çok iyi farkıda olan, kendi ön yargılarını ve

	anlatımla (model, teori, açıklamasıyla) tezi her yönden destekleyen, derinlikli, geniş ve verilen bilginin ötesine geçebilen	derinlikli bir ifadeyle anlatılmış, konunun geçmişini ve kapsamını iyi ifade edebilen	aktarma yetisinde ustalıklı olan	getiren, diğer bakış açılarını da dikkate alarak konuyu objektif ve derinlemesine ele alan	farklılıklara saygılı, başkalarına farklı ve garip görünen deneyimler, durum ve metinleri anlayabilen	çıkarsamalarının farkında olan: tutarlılık ve akılla hareket edebilen
4	Systematic, an atypical and-revealing account, going beyond what is obvious or what was explicitly taught; makes subtle connections; well supported by argument and evidence; novel thinking displayed Sistematik, atipik ve açıklayıcı, görünenin ve öğretilenin ötesine geçebilen, ince	Revealing; a thoughtful interpretation or analysis of the importance, meaning, significance; tells an insightful story; provides a helpful history or context Açıklayıcı: Konunun önemi iyi analiz edilip yorumlanmış; derinlikli, konunun geçmişini ve kapsamını iyi veren	Skilled: competent in using knowledge and skill and adapting understandings in a variety of appropriate and demanding contexts Beceri sahibi: Zorlu ve çeşitli konularda bilgi ve becerilerini ustalıkla kullanarak bilgilerini değişik durumlara uyarlayabilen	Thorough: a fully developed and coordinated critical view; makes own view more plausible by a fair consideration of the plausibility of other perspectives; makes apt criticisms, discriminations, and qualifications Kusursuz: Tam anlamıyla gelişmiş, bağlantılı eleştirel bir bakış açısı, diğer bakış açılarını da dikkatle	Sensitive: disposed to see and feel what others see and feel; open to the unfamiliar or different; able to see the value and work that others do not see Duyarlı: Başkalarının duygu ve düşüncelerini anlayabilen; bilinmedik ve farklılıklara açık olan başkalarının işlerinde diğerlerinin fark etmediklerinin değerini anlayan	Circumspect: aware of own ignorance and that of others; aware of own prejudices Tedbirli: Kendi ve başkalarının bilgisizliğinin ve ön yargılarının farkında olan

	bağlantılar kurabilen, argüman ve delillerle iyi desteklenmiş, original düşünce sergileyen			incelediği için kendi bakış açısını daha kabul edilebilir kılarak ve; yerinde eleştiriler ve öneriler yapan		
3	In-Depth: an account that reflects some in-depth and personalized ideas; student is making the work his own, going beyond the given; there is supported theory, but insufficient or inadequate evidence and argument Derinlikli: derinliği olan ve kişisel katkı yapılmış bir anlatım; öğrenci verilenin ötesine geçip çalışmayı kendine mal	Perceptive: a reasonable interpretation or analysis of the importance, meaning, or significance; tells a clear and instructive story; provides a revealing history or context Kavramış: Konunun önemi iyi incelenmiş, yorumlanmış ve anlaşılmış; net ve didaktik bir anlatım, durumun geçmişini ve içeriğini veren	Able: limited but growing ability to be adaptive and innovative in the use of knowledge and skill Yeterli: Bilgi ve becerilerinin yaratıcı bir şekilde kullanımı ve uyarlamasında sınırlı olmakla birlikte gelişme gösteren	Considered: a reasonably critical and comprehensive look at major points of view in the context of her own; makes clear that there is plausibility to other points of view Başka bakış açılarını dikkate alan: Kendi bakış açısına gore başkalarınınkinide makul ve eleştirel bir biçimde ele alarak başka görüşlerinde mümkün olduğunu gösteren	Aware: knows and feels that others see and feel differently and is somewhat able to empathize with others Farkındalık sahibi:Başkalarının farklı şekilde gördüklerini ve hissettiklerini bilen, ve onlara karşı kısmen de olsa anlayışla yaklaşabilen	Thoughtful: generally aware or what he does and does not understand; aware of how prejudice and projection occur without awareness Dikkatli/saygılı: neyi anlayıp anlamadığının, ve önyargı ve çıkarsamaların farkına varmadan oluştuğunun genellikle farkında olan

	edebilmiş; teori desteklenmekle birlikte argüman ve delilleri yetersiz olan					
2	Developed: an incomplete account, but with apt and insightful ideas; extends and deepens some of what was learned; some reading between the lines; account has limited support, argument, data, or sweeping generalizations; there is a theory with limited testing and evidence Gelişmiş: Oldukça iyi bir fikri olmakla birlikte kendini tam ifade edememiş,	Interpreted; a plausible interpretation or analysis of the importance, meaning, or significance; makes sense with a story; provides a telling history or context Yorumlu, konunun önemi ni anlaşılır şekilde inceleyerek ve kabul edilebilir bir yorumla , geçmişi ve halihazır durumu anlamlı bir şekilde sunuyor.	Apprentice: relies on a limited repertoire of routines, able to perform well in a few familiar or simple contexts; limited use of judgment and responsiveness to feedback or situation Çıraklık aşamasında: Sınırlı sayıda rutinleri uygulayabilen, ancak bildiği ve basit uygulamaları yapabilen, kendi kararlarını almakta ve geri bildirimlere göre davranmakta zorluk çeken	Aware: knows of different points of view and somewhat able to place own view in perspective, but weakness in considering worth of each perspective or critiquing each perspective, especially her own; uncritical about tacit assumptions Farkındalık sahibi: kendisininkiyle beraber farklı bakış açılarının farkında olup, ancak kendisininki de dahil olmak üzere bunların eleştirisini ve	Decentring: has some capacity or self-discipline to walk in others shoes, but is still primarily limited to own reactions and attitudes, puzzled or put off by different feelings or attitudes Kısmi ben merkezlilik: Kendisini başkalarının yerine koyma kapasitesine kısmen sahip olup, ancak yine de büyük ölçüde kendi tutum ve davranışlarıyla sınırlı, farklı duygu ve davranışlardan hoşlanmayan ve bunlar	Unreflective: generally unaware of own specific ignorance; generally unaware of how prejudgments color understanding Düşüncesiz: Genelde konuya özgü kendi bilgisizliğinin ve önyargıların anlamayı nasıl etkilediğinin farkında olmayan

	öğrenilenlerin bir kısmını genişletebilmiş, bir kısım üstü kapalı anlatımların farkında; anlatımında argüman ve destek yetersiz, ya da çok fazla genelleme yapılmış; teorisi olup ispatı yetersiz olan			değerlendirmesini yapan ama derinlemesine anlamakta güçlük çeken	karşısında şaşkınlığa düşebilen	
1	Naive: superficial account; more descriptive than analytical or creative; a fragmented or sketchy account of facts, ideas; glib generalizations; a black-and-white account; less theory than an unexamined hunch or borrowed idea Naif: yüzeysel bir	Literal: a simplistic or superficial reading; mechanical translation; a decoding with little or no interpretation; no sense of wider importance or significance; a restatement of what was taught or read Yorumsuz: basit ya da yüzeysel bir anlayışa sahip, mekanik,	Novice: can perform only with coaching or relies on highly scripted, singular "plug-in" (algorithmic and mechanical) skills, procedures, or approaches Acemi: Ancak koçluk edildiğinde ya da çok detaylı talimatlara uyarak, basit (algoritmik ve	Uncritical: unaware of differing points of view, prone to overlook or ignore other perspectives; has difficulty imagining other ways of seeing things; prone to ad hominem criticisms- Eleştirel yaklaşımdan uzak: Diğer bakış açılarının farkında olmayan, ya da	Egocentric: has little or no empathy, beyond intellectual awareness of others; see things through own ideas and feelings; ignores or is threatened or puzzled by different feelings, attitudes, views Ben merkezli: Entellektüel olarak farkında olmakla birlikte farklılıklara	Innocent: completely unaware of the bounds of own understanding and of the role of projections and prejudice in opinions and attempts to understand Masum: Kendi anlama kapasitesinin sınırları ve varsayımların ve ön-yargıların anlamaya etkisininden hiçbir

	anlatım, analitik ya da yaratıcılıktan çok betimleyici; fikir ve gerçekler kopuk kopuk ve belirsiz, sığ genellemeler yapılmış; siyah-beyaz anlatım; teorisi az, tahmine ve başkalarının fikirlerine dayalı olan	yorumsuz, geniş kapsamlı bakmayan, öğretilen ve okunanı olduğu gibi geri veren	mekanik) becerileri, prosedürleri ve yaklaşımları uygulayabilen	önemsemeyen, farklı gözlerle görme yetisine sahip olmayan	karşı duyarlı olmayan; farklı duyguları, davranışları ve görüşleri dikkate almayan da bunları bir tehdit olarak algılayan	şekilde farkında olmayan

Revised and adapted from Wiggins and McTighe (2011). *Understanding by design. Guide to creating high quality units*. Alexandria: VA.

Translated by Dr Jale Onur and Dr Armağan Ateşkan.

Appendix B: Turkish/Language A: Turkish literature content comparison

Part 4: Options HL: Three Works SL: Three Works Individual oral presentation	11th Grade First Year Serbest Seçim Kitaplarının analizi ve bireysel sözlü sunumların yapılması December (2 weeks- oral presentation) **HL-45 hours**	MINISTRY OF EDUCATION CURRICULUM Turkish Language: Each week -2 hours
Part 1: Works in translation HL: Three works SL: Two works	Novel Analysis-Presentations-The Reflective Statement- Supervised writing Novel Analysis-Presentations-The Reflective Statement- Supervised writing May-June: Novel Analysis-Presentations-The Reflective Statement- Supervised writing Written assignment Paper 1 preparation **HL-65hours**	Each week -2 hours/Each hour 40 minutes III.ÜNİTE:SÖZLÜ ANLATIM (Röportaj-Söylev) **14 hours** II.ÜNİTE: ÖĞRETİCİ METİNLER (Mektup-günlük-anı-biyografi-otobiyografi-gezi yazısı-sohbet-haber yazısı-fıkra-deneme-makale-eleştiri) **56 hours**
Part 2: Detailed study Individual oral commentary HL: Three Works SL: Two works	12th Grade: Poetry Story Theatre Individual oral commentary -2 weeks **HL-65 hours**	Each week -2 hours September-October-November-December: I.ÜNİTE: SANAT METİNLERİ (hikaye-tiyatro-şiir) **24 hours**
Part 3: Literary genres HL: Four Works	12th Grade Second Year: Novel Analysis	Each week -2 hours January-February-March-April:

SL: Three works	Novel Analysis Novel Analysis Paper 2 preparation Paper 1 preparation **HL-65 hours**	I.ÜNİTE: SANAT METİNLERİ (Fabl-masal-roman) **24 hours** May-June: IV.ÜNİTE: BİLİMSEL YAZILAR **4 hours**

IBDP (HL): 240 hours
MoNE: 122 hours

Appendix C: English/Language B: English language and literature (HL) content comparison

Topic	IBDP	Hours of teaching	MoNEP	Hours of teaching
1.	Communication and Media	30	Communication and Media	18
2.	Social Relationships	30	Social Relationships	18
3.	Global Issues	30	Global Issues	18
4.	Health	30	Health	18
5.	Cultural Diversity	30	Cultural Diversity	18
6.	Natural Disasters	-	Natural Disasters	18
7.	Leisure	-	Leisure	18
8.	Science + Technology	-	Science + Technology	18

Appendix D: Biology content comparison

Topic (SL + HL core topics)	Subtopics	IBDP hours	MoNEP hours
Statistical Analysis		2	0
Cells	Total	12	28
	Cell theory	3	2 (9^{th} grade)
	Prokaryotic cells	1	2 (9^{th} grade)
	Eukaryotic cells	3	5 (9^{th} grade)
	Membranes	3	7(9^{th} grade)
	Cell division	2	15 (10^{th} grade)
The chemistry of life	Total	35	
	Chemical elements and water	2	3 (9^{th} grade)
	Carbohydrates, lipids and proteins	3	4 (9^{th} grade)
	DNA structure	3	2 (9^{th} grade)
	DNA replication	3	3
	Transcription and translation	6	6
	Enzymes	3	3 (9^{th} grade)
	Cell respiration	7	20 (10^{th} grade)
	Photosynthesis	8	25 (10^{th} grade)
Genetics	Total	21	83
	Chromosomes, genes, alleles and mutation	2	5
	Meiosis	5	18 (10^{th} grade)
	Theoretical genetics	5	20
	Genetic engineering and biotechnology	5	20
	Dihybrid crosses and gene linkage	3	10
	Polygenic inheritance	1	10
Ecology and evolution	Total	16	
	Communities and ecosystems	5	40 (10^{th} grade)
	The greenhouse effect	3	18 (10^{th} grade)
	Populations	2	16 (10^{th} grade)
	Evolution	3	21
	Classification	3	28 (9^{th} grade)
Human health and physiology	Total	37	69
	Digestion	3	10
	The transport system	3	5
	Defence against infectious diseases	7	8
	Gas exchange	2	6
	Nerves, hormones and homeostasis	6	14

	Reproduction	8	6
	Muscles and movement	4	10
	The kidney	4	10
Plant science	Total	11	52
	Plant structure and growth	4	25
	Transport in angiospermophyta	4	10
	Reproduction in angiospermophyta	3	17
Option: Evolution (HL)	Total	22	21
	Origin of life on Earth	4	
	Species and speciation	5	
	Human evolution	6	
	Hardy- Weinberg principle	2	
	Phylogeny and systematic	5	
Option: Microbes and biotechnology (HL)	Total	22	
	Diversity of microbes	5	
	Microbes and the environment	4	
	Microbes and biotechnology	3	
	Microbes and food production	3	
	Metabolism of microbes	2	
	Microbes and diseases	5	

Appendix E: Mathematics content comparison

Topic	IBDP	Hours of teaching	MoNE	Hours of teaching
1. ALGEBRA		**30**		**59**
1.1 Series and sequences	✓		✓	13
1.2 Exponents and logarithms	✓		✓	13
1.3 Counting principle, Permutations and Combinations, Binomial theorem	✓		✓	14
1.4 Induction	✓		✓	3
1.5 Complex numbers	✓		✓	16
2.FUNCTIONS and EQUATIONS		**22**		**51**
2.1 Concept of functions	✓		✓	5
2.2 Graph of a function	✓			6
2.3 Transformation of graphs			---	---
2.4 Rational functions			---	---
2.5 Polynomial functions and their graphs	✓		✓	22 (10^{th} grade topic)
2.6 Quadratic equations	✓		✓	10 (10^{th} grade topic)

2.7 Solutions to $g(x) \geq f(x)$	✓		✓	8 (10^{th} grade topic)
3. CIRCULAR FUNCTIONS and TRIGONOMETRY		**24**		**40**
3.1 Measures of angles	✓		✓	3 (10^{th} grade topic)
3.2 Trigonometric ratios	✓		✓	8 (10^{th} grade topic)
3.3 Compound angle identities	✓		✓	6 (10^{th} grade topic)
3.4 Trigonometric functions	✓		✓	6 (10^{th} grade topic)
3.5 Inverse trigonometric functions	✓		✓	3 (10^{th} grade topic)
3.6 Solving trigonometric equations	✓		✓	6 (10^{th} grade topic)
3.7 Cosine and sine rules, area of a triangle	✓		✓	5 (10^{th} grade topic)
Product-sum formulae	---		✓	7 (10^{th} grade topic)

4. VECTORS		**24**		**28**
4.1 Concept of a vector	✓		✓	
4.2 Scalar product, angle between two vectors	✓		✓	13
4.3 Vector equation in 2 or 3 dimensions	✓		✓	(12^{th} Grade
4.4 Coincident, parallel, intersecting and skew lines	✓		✓	geometry topic)
4.5 Vector product of two vectors	✓		✓	15
4.6 Vector equation of a plane	✓		✓	(12^{th} Grade
4.7 Intersection of a line with a plane	✓		✓	geometry topic)
5. STATISTICS and PROBABILITY		**36**		**17**
5.1 Descriptive statistics	✓		✓	8
5.2 Probability of an event, venn diagrams	✓		✓	9
5.3 Combined events	✓		✓	
5.4 Conditional probability	✓		✓	
5.5 Probability density function	✓		---	
5.6 Binomial and poisson distributions	✓		---	
5.7 Normal distribution	✓		---	
6. CALCULUS		**48**		**86**
6.1 Limit and continuity	✓		✓	19 (More detailed than the IB

				Curriculum)
6.2 Derivatives	✓		✓	19
6.3 Applications of derivatives	✓		✓	19
L'Hopital Rule	---		✓	
6.4 Indefinite integration	✓		✓	13
6.5 Definite integrals and their applications	✓		✓	16
6.6 Kinematic problems	✓		✓	
6.7 Integration by substitution and by parts	✓		✓	
Integration by partial fractions			✓	
8. OPTION TOPIC: SETS, RELATIONS and GROUPS		**48**		**24**
8.1 Operations on sets	✓		✓	7 (9^{th} grade topic)
8.2 Cartesian product, relations	✓		✓	8 (9^{th} grade topic)
8.3 Functions: Injection, Surjection, bijection. Composite and inverse functions	✓		✓	7 (9^{th} grade topic)
8.4 Binary operations, Cayley tables	✓		✓	12 (9^{th} grade topic)
8.5 Properties of binary operation	✓			
8.6 Identity and inverse elements	✓		✓	

8.7 Group, Abelian Group	✓		---	
8.8 Examples of groups	✓		---	
8.9 Order of a group, cyclic groups, generators	✓		---	
8.10 Permutations	✓		---	
8.11 Subgroups and proper subgroups, Lagrange theorem	✓		---	
EXPLORATION	✓	**10**	---	---
MATRICES		---		**17**
Definition and kinds of matrices	---		✓	
Operations with matrices	---		✓	
Determinant	---		✓	
Matrix solution of systems of equations	---		✓	

Appendix F: IB Learner Profile

(IBO, 2014b)

Appendix G: The common courses selected for the calculation of the average of the scores (Turkish, English, mathematics, chemistry and physics)

	University courses' titles				
	Turkish	English	Mathematics	Chemistry	Physics
University 1 (Foundation)	TURK 101, TURK 102	ENG 101, ENG 102	MATH 101, MATH 102, MATH 105, MATH 106, MATH 119	N/A	PHYS 101, PHYS 102
University 2 (Public)	N/A	ENG 101, ENG 102	MATH 117, MATH 119, MATH 120, MATH 125, MATH 126	CHEM 101, CHEM 102, CHEM 105, CHEM 106, CHEM 107, CHEM 111, CHEM 112	PHYS 101, PHYS 105, PHYS 106, PHYS 109, PHYS 110, PHYS 111, PHYS 112
University 3 (Foundation)	N/A	N/A	MATH 101, MATH 102, MATH 106, MATH 107	CHEM 102, CHEM 103	N/A
University 4 (Foundation)	N/A	N/A	N/A	N/A	N/A

Appendix H: An online questionnaire

Dear Students,

As a part of an International Baccalaureate Organization funded research project (Curriculum Alignment and Student Performance: The IBDP and the Turkish National System) you are asked to complete a short questionnaire.

The purpose of this three-part questionnaire is to find out your opinions about overall preparedness for university education. The first section is about your demographic information. The second section asks questions about your sense of belonging to the university. The third section is about your time management.

The questionnaire is voluntary and the data collected is strictly confidential. It will be analysed and used to better understand the IBDP. If you don't know the answer or don't want to answer a particular question then please leave it blank.

The questionnaire will take approximately 15 minutes.

Thank you,

Armagan Ateskan, PhD.
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Graduate School of Education
ateskan@bilkent.edu.tr

Section 1: Demographic Questions

Please answer each question

1. Name (optional):
2. Age and date of birth:
3. Nationality:
4. Mother's occupation:
5. Father's occupation:
6. Mother's highest level of education that is completed:
7. Father's highest level of education that is completed:
8. Have you ever lived outside Turkey?
9. If yes, how long did you live outside Turkey?
10. If yes, where did you live?
11. Have you gone to school outside Turkey?
12. If yes, how long did you study?
13. If yes, where did you study?
14. Current university:
15. Department:
16. Year of study:
17. Continuation: did you transfer from another department?
18. YGS score (optional):
19. LYS score:
20. Score type of LYS:
21. Name of your high school:
22. Year of high school graduation:
23. Which program did you graduate from? IBDP+ MEB or MEB only?
24. If IBDP + MEB, what is your IBDP diploma score?
25. Did your school provide IBDP program?
26. Were you enrolled in any other programs? If yes, please select all those that apply.

PYP, MYP, IGCSE, other?

Section 2: Psychological Sense of School Membership Scale (Goodenow, 1993)

For each of the following statements please indicate whether you: strongly disagree (1); somewhat disagree (2); neither agree nor disagree (3); somewhat agree (4); strongly agree (5).

	Strongly disagree	**Somewhat disagree**	**Neither agree nor disagree**	**Somewhat agree**	**Strongly agree**
I feel like a real part of my university.	1	2	3	4	5
People here notice when I am good at something.	1	2	3	4	5
It is hard for people like me to be accepted here.	1	2	3	4	5
Other students in this university take my opinions seriously.	1	2	3	4	5
Most teachers at my university are interested in me.	1	2	3	4	5
Sometimes I feel as if I don't belong here.	1	2	3	4	5
There is at least one faculty member at university I can talk to if I have a problem.	1	2	3	4	5
People at this university are friendly to me.	1	2	3	4	5
Teachers here are not interested in people like me.	1	2	3	4	5
I am included in lots of activities at my university.	1	2	3	4	5
I am treated with as much respect as other students.	1	2	3	4	5

I feel very different from most other students here.	1	2	3	4	5
I can really be myself at this university.	1	2	3	4	5
The teachers here respect me.	1	2	3	4	5
People here know I can do good work.	1	2	3	4	5
I wish I were in a different university.	1	2	3	4	5
I feel proud of belonging to my university.	1	2	3	4	5
Other students like me the way I am.	1	2	3	4	5

Section 3: Time management (Britton and Tesser, 1991)

Answer the following questions based on your responses.

Part A. Short-range planning

	Never	Infrequently	Sometimes	Frequently	Always
Do you make a list of the things you have to do each day?	1	2	3	4	5
Do you plan your day before you start it?	1	2	3	4	5
Do you make a schedule of the activities you have to do on work days?	1	2	3	4	5
Do you write a set of goals for yourself for each day?	1	2	3	4	5
Do you spend time each day planning?	1	2	3	4	5
Do you have a clear idea of what you want to accomplish during the next week?	1	2	3	4	5
Do you set and honour	1	2	3	4	5

priorities?

Part B. Time attitudes

	Never	Infrequently	Sometimes	Frequently	Always
Do you often find yourself doing things which interfere with your university work simply because you hate to say 'No' to people?	1	2	3	4	5
Do you feel you are in charge of your own time, by and large?	1	2	3	4	5
On an average class day do you spend more time with personal grooming than doing schoolwork?	1	2	3	4	5
Do you believe that there is room for improvement in the way you manage your time?	1	2	3	4	5
Do you make constructive use of your time?	1	2	3	4	5
Do you continue unprofitable routines or activities?	1	2	3	4	5

Part C. Long-range planning

	Never	Infrequently	Sometimes	Frequently	Always
Do you usually keep your desk clear of everything other than what you are currently working on?	1	2	3	4	5
Do you have a set of goals for the entire quarter?	1	2	3	4	5

The night before a major assignment is due, are you usually still working on it?	1	2	3	4	5
When you have several things to do, do you think it is best to do a little bit of work on each one?	1	2	3	4	5
Do you regularly review your class notes, even when a test is not imminent?	1	2	3	4	5

References:

Britton, B. and Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology, 83*(3), 405.

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*(1), 79-90.

Appendix I: Focus group interview protocol

Focus group interview protocol

Names_____

Group _____Department_____Grade_____

Interviewed by_____Date_____

To facilitate our note-taking, we would like to audio tape our conversations today. For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. You need to sign "the informed consent form" to take part in this research.

We have planned this interview to last 75 minutes. During this time, we have seventeen questions that we would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead to complete the questions.

Thank you for your participation.

Introduction

You have been selected to speak with us today because you have been identified as a representative of the group of IBDP and non-IBDP graduates. In this research, we would like to find out if the attributes of the IBDP learner profile align with similar Turkish national standards, and what role they have on success. We will also try to explore the perceptions of the IBDP and non-IBDP graduates about their preparation at the secondary level for future university education.

Thank you for volunteering to take part in this research.

A. Interviewees background

- Name of students' programs:

  _____

- Years in program: _____
- Number of courses taken this academic year: Fall 2013_____ Spring 2014 _____
- Gender: _____
- Age:
- Place of residence:
  University residence ____ Off-campus within walking distance ____Off-campus within driving/commuting distance ____
- Live with parents? yes/no
- Employment status: Full-time ___ Part-time ___ Not currently employed ____
  Hours of work per week: _____
- Why did you choose or not choose IBDP when you were at high school?

B. Sense of belonging

1. Do you feel a real part of your university? Why/why not?
2. Is it possible for you to demonstrate your strengths at university?
3. Do you feel accepted within the university? Why/why not? How can you say that?
4. How was adaptation from high school to university?
5. Do you believe that following your high school program has impacted your sense of belonging to the university? Why/why not? Can you give example(s)? Do you have any sense that IBDP graduates have a higher degree of belonging to the university?

C. Critical thinking skills

1. Do you consider yourself a critical thinker? Why or why not?
2. Do you think your high school education provided you with critical thinking skills? Explain by giving examples.
3. What kinds of activities did you go through to improve your critical thinking skills?

D. Academic preparation

1. What do you do throughout the semester to get ready for your courses? i.e. studying in advance, completing homework, etc.

2.Where did you develop this habit? i.e. high school, primary school, family

3. How do you get prepared before the exams? Where did you develop this habit?

4. Did the courses that you studied in high school help you with university courses? Why/why not? How? Can you give example(s)?

E. Time management

1. Define ‘time management’.

2. What are the challenges of time management?

3. Talk about a typical university day. What specifically do you do to organize your time?

4. Do you use any time management techniques such as goal setting, prioritization, balanced planning? If yes, how do you use these techniques?

5. How successful do you think you are at managing your time? Do you think your previous education (high school education) helped you to have better time management skills?

Thank you. Are there any other things you would like to share related to our discussion today?