THE EFFECT OF INTERDISCIPLINARY COLLABORATION IN LANGUAGE LEARNING : A CASE STUDY

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JÜRİ VE ENSTİTÜ ONAYI

Bu belge, Yükseköğretim Kurulu tarafından 19.01.2021 tarihli "*Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına İlişkin Yönerge*" ile bildirilen 6689 Sayılı Kişisel Verilerin Korunması Kanunu kapsamında gizlenmiştir.

ETİK İLKE VE KURALLARA UYUM BEYANI

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To Deniz Kulalı,

I would like to devote this research study to my beloved uncle Deniz Kulalı whose sudden death has left a big void in my heart. He had always been very supportive and encouraging through my research study, and he was one of the main reasons why I have always tried my best to fulfill my dreams and reach my goals.

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Çiğdem Eflanili

June, 2021

ÖZ

DİSİPLİNLERARASI İŞBİRLİĞİNİN DİL ÖĞRENİMİNE ETKİSİ: BİR VAKA ÇALIŞMASI

Çiğdem Eflanili
Yüksek Lisans Tezi
Eğitim Bilimleri Anabilim Dalı
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Bu çalışmanın amacı disiplinlerarası işbirliğinin IB MYP ortaokulu öğrencilerinin dil edinimi derslerindeki başarısı üzerindeki etkisini araştırmaktır. Araştırma üç IB programını (IB PYP, IB MYP, IB DP) uygulayan İstanbul ilinde yer alan özel bir okulda 194 IB MYP öğrencisi ve toplam 8 IB MYP öğretmeni ile uygulanmıştır. Çalışmada nicel ve nitel araştırma yöntemlerine ve verilere yer verilmiştir.

Araştırmaya katılan her ortaokul öğrencisinden " İngilizce Dersine Yönelik Tutum Ölçeği" ve "Ortaokul Öğrencileri için Araştırma-Sorgulamaya Dönük Tutum Ölçeği (ASYTÖ)" tamamlamaları istenmiştir. Ölçeklerden elde edilen veriler SPSS 22 programı kullanılarak analiz edilmiştir. Nicel verilere destek olması amacı ile 8 IB MYP öğretmeni ve her seviyeden 4 ile 5 öğrenci olmak üzere oluşturulan odak gruplar ile yarı yapılandırılmış görüşmeler yapılmıştır. Elde edilen veriler doğrultusunda, "Disiplinlerin birleştirilmesi öğrencilerin dil öğrenim sürecine nasıl katkıda bulunur?" ve "Öğrencilerin İngilizce dersine olan tutumu disiplinlerarası anlayışı ve dil öğrenme sürecini nasıl etkilemektedir?" gibi sorulara cevaplar bulunmuştur.

Disiplin temelli bilgilerin diğer disiplinler ile etkili bir şekilde birleştirilemediği gözlemlense de, bütüncül bilginin öğrencilerinin bakış açıları üzerinde etkili bir rol oynadığı bilgisine ulaşılmıştır. Böylelikle, dil edinimi dersinde öğrenilen kavramlar ve bağlamlara başka bir derste karşılaşıldığında öğrenci için dil edinimi daha anlamlı ve önemli olmaktadır. Disiplinlerarası eğitiminin ve işbirliğinin faydalarını anlamak adına öğrencilerin disiplinlerarası öğrenme ortamındaki süreçlerini gözlemlemek gerekmektedir.

Anahtar Sözcükler: Disiplinlerarası Öğrenme; Dil Edinimi; Uluslararası Bakalorya Ortaokul Programı; Sorgulamaya Dayalı Öğrenme.

ABSTRACT

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The main objective of the study is to investigate the effects of interdisciplinary teaching and learning on English class and the impact that it creates on the IB MYP Emergent and Capable Level students (Grade 5, 6, 7 and 8) in the selected IB continuum school, applying the MYP curriculum, in Turkey.

The study was conducted by using a mixed approach which enables the researcher to use both qualitative and quantitative data collected from 194 middle school students and 8 IB MYP teachers. Each student completed the questionnaires on Inquiry-based Learning and Attitude to English Classes. There are 7 Focus Groups; 5 Focus Groups with a random sampling of middle school students and 2 Focus Groups of related subject area teachers. In line with the purpose of study, the selection of subject-area teachers is limited to English, Maths, and Science which use English as the language of instruction in the selected IB school. The data collected from each participant is analyzed with the help of SPSS 22. Under the light of this study, the answers to the questions such as "In what ways does integrating disciplines contribute to students' language learning process?", and "How does students' attitude towards English class affect the interdisciplinary understanding and language learning process?" are provided.

It is understood that discipline-specific approaches cannot interface with other disciplines successfully. On the other hand, holistic knowledge can create a beneficial impact on the students' perspectives. Therefore, a student can give more meaning and importance to language acquisition when the concepts and contexts are encountered in other disciplines as well. The language would be more meaningful and useful to students and become an indispensable part of learning in students' minds. To see the benefits of interdisciplinary learning and interdisciplinary collaboration between the teachers, it is important to analyze students' learning processes in an interdisciplinary learning environment.

Keywords: Interdisciplinary Learning ; Language Acquisition; International Baccalaureate Middle Years Programme; Inquiry-based Learning.

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ABBREVIATIONS

AI : Artificial Intelligience

AR :Augmented Reality

ATL : Approaches to Learning

FIR : Fourth Industrial Revolution

IB : The International Baccalaurate

IB CP : The International Baccalaurate Career-related Programme

IB DP : The International Baccalaurate Diploma Programme

IB MYP : The International Baccalaurate Middle Years Programme

IB PYP : The International Baccalaurate Primary Years Programme

IDU : Interdisciplinary Unit

OECD : Organisation for Economic Co-operation and Development

STEAM : Science- Technology- Engineering- Arts- Maths

STEM : Science- Technology- Engineering- Maths

VR :Virtual Reality

CURRICULUM VITAE

Çiğdem Eflanili

Educational Management and Supervision

Education

2006 – 2010 Kenan Evren Anadolu Lisesi

2010 – 2014 Istanbul University-English Language Teaching

2013 – 2014 Goethe University Frankfurt - Erasmus Exchange Programme

Work

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12/2013 – 06/2014 Istanbul University H.a.y.e.f Çocuklar Evi (Kindergarten) - English Teacher

CHAPTER 1. INTRODUCTION

In this section, the problem will be put forward with the related literature review, the purpose of the study and necessary research.

1.1 Problem

The systems of education has shown progress and considerable change over the centuries. These changes have been affected by a major consideration of preserving the values, norms and customs of the societies while providing a place for change and development.

The Industrial Revolution has a huge impact on the perception of education and its purpose for the society. Starting from the revolution provoked by the power of steam and going through the power of wireless technology and applications, the scope of education can be said to change remarkably.

A systematic and strict degree options have left their place to collaborative, skills developed and project based teaching and learning. This great change in education has also forced educators to catch up with the latest developments, even foreseeing the future's demands to raise capable individuals for the future world (Brown, Lauder, & Ashton, 2008).

The steps of this remarkable change have not immediately shown itself, it has always taken years to adapt to the change and see the advantages and disadvantages of the steps. However, the adaptation process and embracing the change has always lagged behind the speed of technology. So, the individuals have always been prepared for the today's demands and conditions, not for the future's.

As a result, educators must foresee the need of the upcoming decades and reshape the objectives of the lesson plans and curricula. In the close future, the discussions will

be about exponential technologies; Articial Intelligience (AI), biotechnology and nanomaterials.

The future workplace of 21st-century students will ask for interdisciplinary and interpersonal skills. The knowledge of one discipline will be no longer in demand, rather knowing the ways of using the knowledge from different disciplines to create solutions and solve problems will be the most useful skill. While thinking critically and creating unique solutions, individuals must also show a good level of collaboration and cooperation in and out of workplace.The future must not be imagined as a term for the future centuries, tomorrow is the future.

In the year of 2020, the humankind faced one of the hardest times that is compeletely shaped by the speed of adaptation to the change. The name of the change is COVID-19. As stated by WHO "Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus" and it has affected millions of people and changed the life of billions (World Health Organization, 2020).It has changed the way of communication, social life, work and most importanly education. According to the OECD, the COVID-19 has triggered one of the greatest economical crises since the Great Depression. There is a real danger that the pandemic will increase poverty and widen the inequalities in the society; the job crisis will eventually turn into a social crisis. Reconstructing a better and more resilient workplace will be the salvation of the societies. And, this can only be possible by changing the scope of education to the 21st-century's demands such as creative thinking, resilience, and collaboration.

The International Baccalaurate (IB) focuses on preparing students for life, rather than sitting standardized tests. It accepts the fact that today's students will enter a world different than they imagined. Therefore, the International Baccaluarate works on designing more skill oriented lesson contents and programs rather than knowledge based units and lessons. The students of the IB are prepared to synthesise information to ask good questions and create solutions to possible problems.

In this study, the collaboration between disciplines to create the atmosphere of interdisciplinary teaching and learning in the IB MYP Emergent and Capable levels and

whether there is a meaningful connection between the interdisciplinary learning and language acquisition process in the IB MYP Emergent and Capable levels is investigated.

1.2 The Four Industrial Revolutions and Education

The transition from manual production methods and man labor to machines and steam power have started the first steps of social, economical, and technological changes. The changes that have been observed in these areas have been affected by wars, civilizations, technological updates, and inventions.

The Industrial Revolutions have been shaping the future of education, the conception of work, and the roles in society. The first three Industrial Revolutions give a clear picture of the potential social and educational transformations in the upcoming years. Table 1 below shows the main characteristics of the four Industrial Revolutions. In the pages 4, 5, 6 and 7, these four periods and their relation to education are investigated (Xu, David, & Kim, 2008).

Table 1. Main Characteristics of Industrial Revolution

Period	Transition Period	Energy Resource	Main Achievement Technical	Main Industries Developed	Transport Means
I: 1760-1900	1860-1900	Coal	Steam Engine	Textile, Steel	Train
II: 1900-1960	1940-1960	Oil Electricity	Internal Combustion Engine	Metallurgy, Auto Machine Building	Train- Car
III: 1960-2000	1980 - 2000	Nuclear Energy Natural Gas	Computers, Robots	Auto, Chemistry	Car- Plane
IV: 2000-	2000-2010	Green Energies	Internet, 3D Printer, Genetic Engineering	High-tech Industries	Electric Car Ultra- Fast Train

1.2.1 Educational Changes and Needs in the First two Industrial Revolutions

The first industrial revolution took place in England in 1760 with the invention of the steam engine and lasted until 1900 (Penprase, 2018). The use of the steam engines and the power of coal led to a dramatic change in society by shifting from farming to the new manufacturing process especially in the textile and steel industries.

The 19th-century can be defined as the age of civil wars, colonialism, and imperialism. The industries were considering exploiting natural sources to produce goods and services. The concepts of mass production and division of labor were being mentioned (Brown, Lauder, & Ashton, 2008). Hierarchy and hierarchical decision making was accepted as the most efficient way to control and use.

The first Industrial Revolution resulted in the improvement of living standards, financial possibilities, and status. As a result, a larger group of people could benefit from public education and schooling. The curriculum of the 19th-century education was designed to correspond to the societal demands of the century. The main goal was to prepare students for the diverse jobs. The inefficient number of teachers and classrooms were made efficient by mass education where one teacher was supposed to teach as many students as possible. As a result, this mass education created the need for a model that supported the standardized assessment, examination, and static, linear teaching (OECD, 2019). In other words, the change in the production and the shift of the power have created a demand for a curriculum that provides diverse degree options and sets boundaries between disciplines (Penprase, 2018).

The Second Industrial Revolution took place between the years 1860 and 1900 when the new manufacturing technologies based on electricity were emerging. This great change in production has allowed the start of mass production and the era of electricity. The concepts of autonomy, independence, and individualism became important. The last years of the century also witnessed the rapid growth of the Internet. This change allowed the industry to open up places for computers and electronics and caused competition among businesses. The mass exploitation of natural sources in the 19th-century led to ecological destruction, environmental disasters, and extinction of some species. The non-

renewable energy sources such as carbon-based fossil fuel, earth minerals, and groundwater have a limited extent that people can rely on. Therefore, this limitation created a necessary change of exploitation from nature to human. The demand for human labour increased and caused organizations to share the work and improve decision-making systems within the organizations (OECD, 2019).

The concept of a “new economy” encouraged the expansion of innovative educational institutions especially in Europe and the United States. These institutions were funded through private and public funding. Moreover, the majority of the newly founded institutions were co-educational and praised the role of women in work and academic settings (Lauder, Brown, & Ashton, 2011).

The new educational instutitions and reformed curricula after the first two Industrial Revolutions prepared the ground for the capacity to implement the expansion and development of the production and economy in the 20th-century (Penprase, 2018). Although the curriculum was static and stardardized, it included non-academic subjects which could offer room for individual fulfillment. Individual fulfillment can be summarized as an achievement of personal life goals which are important to human. The feeling of individual fulfillment can motivate students to sustain learning and make it more meaningful for their own authentic context. According to Plato' s view, education is not only a process of acquiring necessary skills, but also an intellectual and character-forming journey (Plato, 340 BC). Each set objective and skills integrated in the lesson cannot be measured by its amount of information, but rather its affect on abstract levels of thinking and understanding of each individual.

The standardized tests were used to provide and ensure the accountability of education institutions and their level of achievement in terms of set curricula objectives. Besides, teachers and education institutions were asked to provide equal conditions and opportunities to the learners through mass education.

1.2.2 Educational Changes and Needs in the Third Industrial Revolution

The Third Industrial Revolution which took place between the years 1969 and 1990's created a huge impact on the fields of politics, economics, and education. It was the movement towards online technologies, electronics, telecommunications, and computers. This movement led to new opportunities for space expeditions, automation, online technological inventions, and biotechnology (Xu, David, & Kim, 2008).

The Third Industrial Revolution resulted in the expansion of educational institutions. The increase of online technologies enabled globalization and diversity in higher education. Especially the countries such as India, China, and the United States exhibited a remarkable increase rate in enrollment and student population. The economical, political, and social affects of the increasing number of university graduates in these countries can be observed in the 21st-century (Lauder, Brown, & Ashton, 2011). Expanding access to higher education is an example of meritocratic competition. The 44th president of the United States, Barack Obama once said that

> "In a global economy where the most valuable skill you can sell is your knowledge, a good education is no longer just a pathway to opportunity, it is a pre-requisite." (Obama, 2009)

Furthermore, the acquisition of disciplinary knowledge is no longer enough for a 21st-century individual to find a strong place in the global economy and today's market. The learners of the 21st-century should be equipped with necessary skills to combine their disciplinary knowledge to create interdisciplinary understanding and make meaningful connections with the real world.

Daniel Bell stated in his study published in 1970 that

> "The post-industrial society, in its initial logic, is a meritocracy. Differential status and differential income are based on technical skills and higher education. Without these achievements one cannot fulfill the requirements of the new social division of labor which is a feature of that society. And there are few high places open without those skills." (Bell, 1973)

In addition to Daniel Bell's study, Hugh Lauder highlighted the power of combination of knowledge, skill and human investment to increase national economic

growth and create potential for a rapid social mobility through investments in human capital (Lauder, Brown, & Ashton, 2011).

All these rapid changes in technology and the definition of labor have created "social pain" at the societal level. In the Future of Education and Skills 2030 report published by OECD in 2019, the social pain is defined as *"a divide between those who benefited from the revolution and those who did not"* (OECD, 2019).To prevent social pain and boost prosperity, the countries have an urge to go through transformative changes and adapt to the new way of life and its demands. This can be achieved if the countries expand their research on understanding what computers can and cannot do (OECD, 2019).

The changing realities in the world have also impacted the concept of education. The content and standards of education have been reformed. The curricula have been changed from teacher-centered, knowledge-based to an interactive, inquiry-based and student-centered. This change has also promoted the problem-solving and metacognitive, critical thinking skills in the learning process. The education expanded from the rooms of the schools and colleges to online education platforms. These platforms were initiated by some online education companies such as Coursera, Edex, and some are non-profit like Khan Academy and developed partnerships with universities to create more interactive, life-long learner-centered platforms (Young, 2017). As the productivity of new technologies have enabled the increase in potential of translating knowledge work to working knowledge, reducing the cost of knowledge and the differences between high-skill and low-skill work started to play a crucial role in the businesses (Lauder, Brown, & Ashton, 2011).

In the years of the Third Industrial Revolution, the educators and learners found themselves accessing information freely and easily. This shift in the access of information led to the implementation of interpersonal skills in more interdisciplinary curricula. An interdisciplinary curriculum merges different perspectives of multiple disciplines into a single perspective. Moreover, it can create meaningful collaboration between different disciplines. William H. Newell put this difference between discipline-based to interdisciplinary teaching forward in his study "Interdisciplinary Curriculum

Development" as the shift from regurgitating memorized answers to deeper understanding by analytical thinking, critical thinking, researching. Newell also mentioned that interdisciplinary curricula provides effective tools to promote traditional liberal art skills such as writing, speaking, analytical thinking, creative thinking, and learning and synthesizing new ideas (Newell, 1990).

1.2.3 The Emerging Changes and Needs of the Fourth Industrial Revolution

Each subsequent revolution builds up fifty times over the preceding age while it wipes out the jobs of the preceding age (Xu, David, & Kim, 2008). The Fourth Industrial Revolution was initiated by the massive use of the Internet in daily lives and the increasing place of virtual technologies in the market and worldwide economies.

While machines and steam were the main assets of the First Industrial Revolution rather than people, in the 21st-century the management style of the previous ages cannot be applicable. The management strategies of the previous ages focused solely on physical labor and goods production and services. However, in the 21st-century companies compete to find ways to motivate their workers to show creativity and release their true potential. The new approach of management in the dynamic global world, business leaders perceive human creativity and individual initiative as the keys of success. The employees are no longer forced to fit in the corporate model of the past but rather to find a place in the flexible organizations with their idiosyncratic knowledge and unique skills (Lauder, Brown, & Ashton, 2011).

The Fourth Industrial Revolution has the potential of shaping the future by having its impacts on governments and businesses. Unlike the preceding ages, people can neither control the speed of the development nor its outcomes. Nonetheless, the companies and governments which can foresee or predict the opportunities within this new age can improve and benefit.

There are many opportunities derived from the integration of Artificial Intelligence (AI) in the global market and education. Although Artificial Intelligence(AI) is competent in routine and cognitive tasks, it does not show competency in tasks

requiring complex processes and ethical judgments. Therefore, the demand for higher-order, cognitive, and interpersonal skills have started to play a crucial role in the market.

Some substantial changes to the STEM (Science- Technology- Engineering-Maths) curricula is inevitable. Especially, the fields of rapidly changing areas such as data science, artificial intelligence, robotics, and nano-materials need to be implemented to the new interdisciplinary curricula and used to close the gap between technology and education (Penprase, 2018). When the race between technology and education is on technology's side, people can suffer from "social pain". However, if educational improvements can keep up with technological developments, people can experience prosperity and wealth (OECD, 2019).

Bryan Edward Penprase stated that

> "Any educational plan for the Fourth Industrial Revolution must be built upon the results of the Third Industrial Revolution described above, with its emerging development of hybrid online and in-person instruction, and efficient and seamless integration of global video-conferencing and a wide array of asynchronous educational resources. Blended instruction, and optimization of the "flipped" class, and online courses will make more efficient learning environments for students that can adapt for diversity in preparation within students." (Penprase, 2018)

There are examples of projects aiming at developing curricula to meet the demands of the 21st-century such as the following projects.

OECD the Future of Education and Skills 2030 Project

The OECD Education Policy Committee in 2015 decided to look at the bigger picture and recognize the potential challenges in education. Therefore, the committee highlighted the urge for change in the current curricula and develop it towards more skills and learner-based learning.

In 2016, the Future of Education and Skills 2030 project was launched to close the gap between technology and education. There are two phases of the project;

• The first phase (2015-18) focused on "what" questions – what kinds of competencies (knowledge, skills, attitudes, and values) today's students need to thrive in and shape the future for better lives and individual and societal well-being

• The second phase (2019 and beyond) focused on "how" questions – how to design learning environments that can nurture such competencies, i.e. how to implement curricula effectively (OECD, 2019).

The New Normal of education has been put forward by OECD in Table 2 below.

Table 2. The New Normal in Education

Features	Traditional education system	An education system embodying the "new normal"
Education System	Education is an independent entity.	Part of a larger eco-system
Responsibility and stakeholders engagement	Decisions made based on a selected group of people. Division of labour	Decision-making and responsibilities shared among stakeholders Shared responsibility
Approach to effectiveness and to quality of school experience	Outcomes most valued. Focus on academic performance	Valuing not only "outcomes"" but also "process" Focus on not only academic performance but also on holistic student well-being
Approach to curriculum design and learning progression	Linear and standardized progression	Non-linear progression
Focus of monitoring	Valuing accountability and compliance	System accountability as well as system improvements
Student assessment	Standardised testing	Different types of assessments used for different purposes
Role of students	Learning by listening to directions of teachers with emerging student autonomy	Active participant with both student agency and co-agency in particular with teacher agency

The Future of Skills and Education 2030 Project began by revising the definition and selection of competencies. Theoretical and Conceptual Foundations (DeSeCo) project categorizes competencies as OECD Key Competencies:

- Use tools interactively (e.g. language, technology)

The ability to use language, symbols, and text interactively

The ability to use knowledge and information interactively

The ability to use technology interactively

- Interact in heterogeneous groups (relation building, cooperation)

The ability to relate well to others

The ability to co-operate

The ability to manage and resolve conflicts

- Act autonomously (agency)

The ability to act within the "big picture"

An example of FIR (Fourth Industrial Revolution) curriculum must consider the 21st-century skills and computer science subjects embedded in the traditional "primary" sciences (biology, chemistry, and physics). This could create new approaches and opportunities to shift the scope of traditional education and open a place for discussion on developing areas such as synthetic biology and molecular design (Xu, David, & Kim, 2008).

Stanford University – Life Science Curriculum

One example of the integration of the 21st-century skills in the curriculum can be given from the reshaped Life Science curriculum at Stanford University. The curriculum includes a new course which is Problem-Solving in Biology. In this course, students are asked to find solutions to real-world problems and create experiments to find cures. Students can use the data perceived from other courses such as Scientific Literature and

Experiment Design to promote critical thinking and meta-cognitive skills to promote interdisciplinary learning.

Another course that has been modified is Engineering Biology which can be used to improve bio-economy emerging field in countries' economics and market, the course asks students to design their own life forms on computers and "bio-print" them to find practical solutions to current issues (Endy, 2016).

The pace of development in the 21st-century is higher than in the previous centuries. The advance in technologies results in a greater demand for reform in the educational platforms.

The rapid changes in FIR social, economical, and business platforms require a more detailed and updated interdisciplinary curriculum that can meet the needs both individually and collectively.

1.3 The International Baccalaureate Continuum

The International Baccalaureate (IB) is a system that is worldwide accepted and implemented in many schools and national education curricula (IBO, About the IB , 2021). It offers teachers and educators different approaches and techniques to achieve more than the expectation of the curriculum objectives. The number of IB schools around the world have increased rapidly in the last decade. It is stated that in 2021, the number of IB programmes offered worldwide reached 7,400 by 5,500 schools in 159 countries around the world. Figure.1 shows the number of the IB programmes taught in each region (IBO, IB Facts and Figures, 2021).

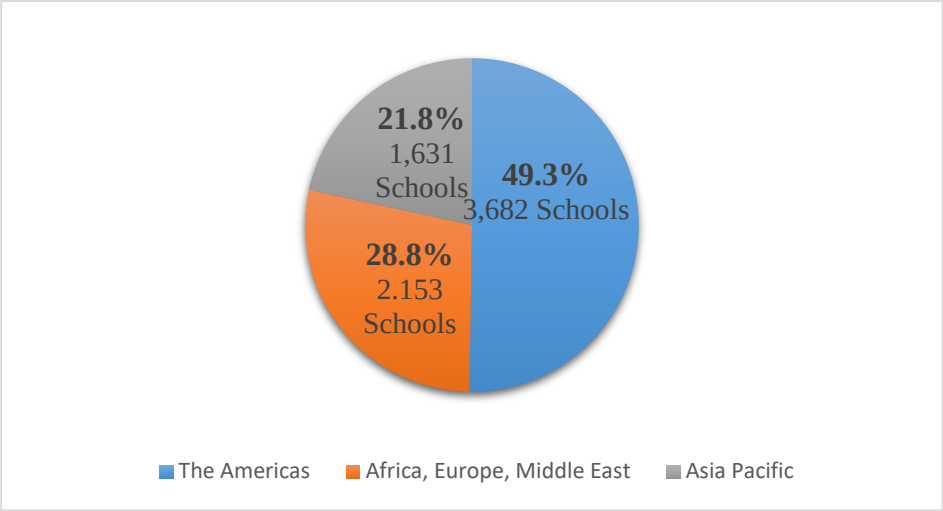


Figure 1. The Number of IB Programmes Taught in Each Region

Moreover between the years 2016 and 2020, the increase in the number of programmes offered by IB has grown by 33.3%. The IB programmes provide learners and educators different ways to improve themselves towards their goals both in and out of the school environment. The mission of the IB is to create a better world through more meaningful education (IBO, Middle Years Programme Teaching the Disciplines in the MYP: Nurturing big ideas and deep understanding, 2012).

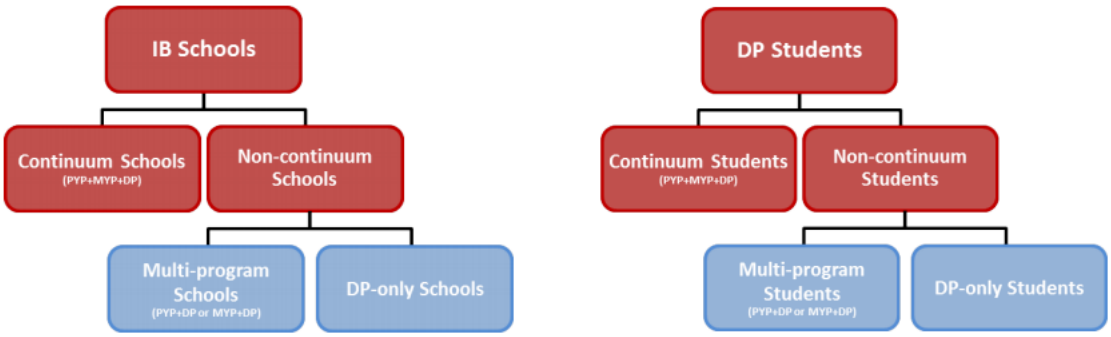
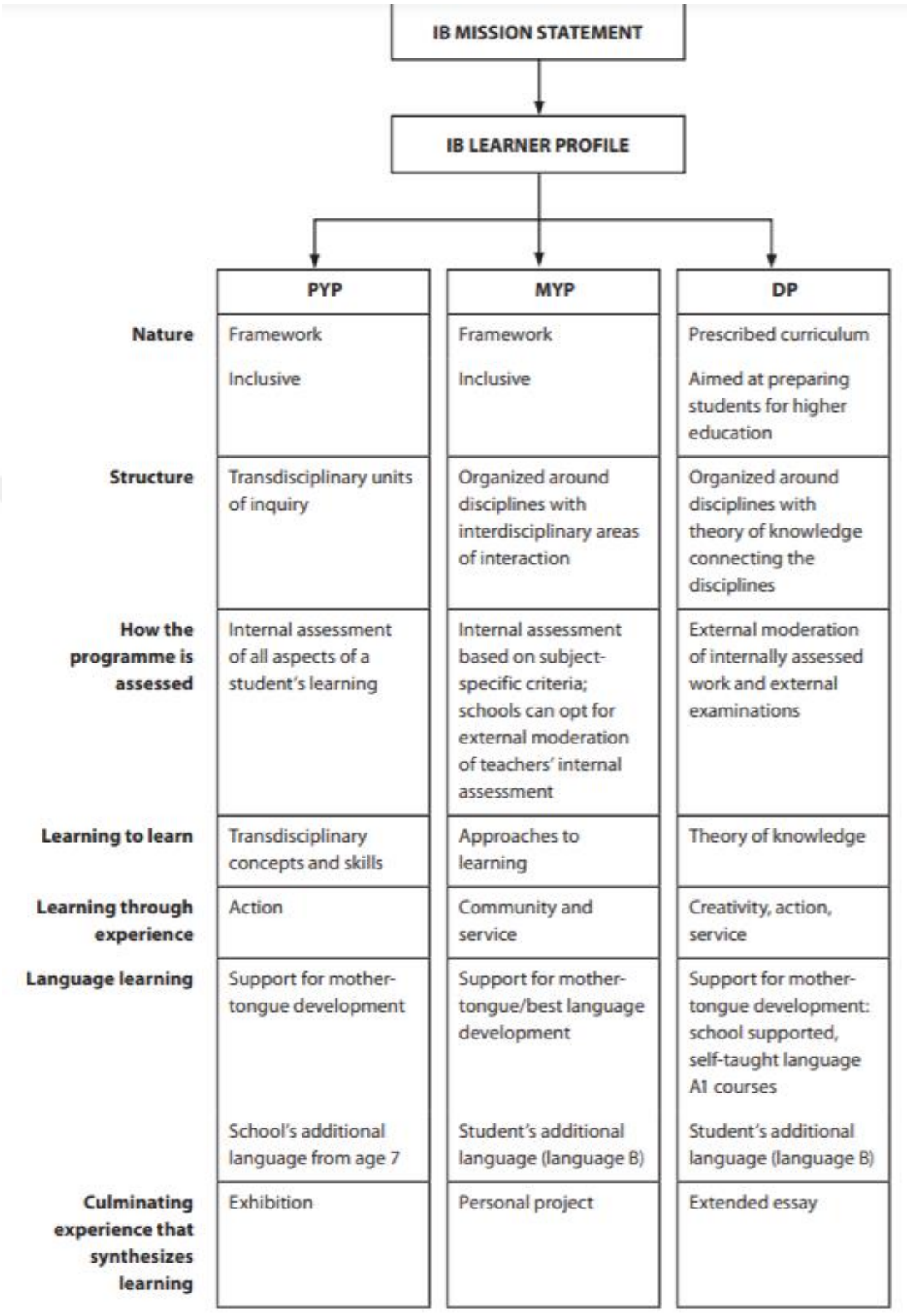


Figure 2. The IB Schools Continuum and Non-Continuum

The IB schools can be classified as “continuum” or “non-continuum” schools. The IB schools have different combinations of the IB programmes, it is important to classify the schools according to these combinations. The schools which are equipped with three IB programmes are named as “IB Continuum School”,and another category is the “Non-

continuum Schools", consisting of only DP program. In 2006, the IB decided to adapt LP (Learner Profile) across all programs, which enabled DP students to have a coherent framework of their learning outcomes and make more meaningful connections between the stages of the continuum (Walker, Bryant, & Lee, 2014).

The IB programmes can be listed as the IB PYP (Primary Years Programme), the IB MYP (Middle Years Programme), the IB DP (Diploma Programme) and the IB CP (Career Programme). Each one of these programs recognizes the needs of the students and the expectation of teachers to reach the target objectives (IBO, Programme Standards and Practices, 2018).



	PYP	MYP	DP
Nature	Framework Inclusive	Framework Inclusive	Prescribed curriculum Aimed at preparing students for higher education
Structure	Transdisciplinary units of inquiry	Organized around disciplines with interdisciplinary areas of interaction	Organized around disciplines with theory of knowledge connecting the disciplines
How the programme is assessed	Internal assessment of all aspects of a student's learning	Internal assessment based on subject-specific criteria; schools can opt for external moderation of teachers' internal assessment	External moderation of internally assessed work and external examinations
Learning to learn	Transdisciplinary concepts and skills	Approaches to learning	Theory of knowledge
Learning through experience	Action	Community and service	Creativity, action, service
Language learning	Support for mother-tongue development School's additional language from age 7	Support for mother-tongue/best language development Student's additional language (language B)	Support for mother-tongue development: school supported, self-taught language A1 courses Student's additional language (language B)
Culminating experience that synthesizes learning	Exhibition	Personal project	Extended essay

Figure 3. The IB Programmes

As it is shown in the Figure 3, the three programmes of the IB show some differences in terms of their nature, structure, assessment and language learning experiences. These three programmes are designed according to the needs of the following program and to prepare its learners for it. While the structure and learning to learn parts of the IB PYP and IB MYP are considered, the transition from transdisciplinary learning experience to organized disciplines to provide interdisciplinary experience is seen. In addition, the Approaches to Learning (ATL) skills are put into practice in all three programmes as the Learning Attributes to create a more holistic experience of all IB programmes.The transition and continual progress between the programmes enable learners to build on their knowledge and previous experience to develop themselves as both life-long learners and thinkers.

International Baccalaureate states their mission as;

> "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." (IBO, The IB Mission, 2021).

It encourages the learners to become life-long learners who can contribute to make world a better place. The Learner Profile Attributes shared above "Inquiring-Knowledgeable and Caring" are at the heart of every IB programme along with the target objectives and skills. Besides these three LPs, there are seven other important Learner Attributes. The Learner Profile (LP) can be defined as a set of attributes and descriptors that students are encouraged to improve throughout their journey in the IB programs. Although, the first evidence of LPs were originally found in the IB PYP, named as " IB PYP Student Profile", the benefits and contributions of the IB PYP Student Profile were noticed, and therefore these IB PYP Student Attributes were also included in the IB MYP and DP. In 2006, the IB PYP Student Profile Attributes were renamed as "IB Learner Profiles" (Walker, Bryant, & Lee, 2014).

The IB Learner Profile Attributes are;

- Inquirer
- Knowledgeable
- Thinker
- Communicator
- Principled

- Open-minded
- Caring
- Risk-taker
- Balanced
- Reflective

The LP provides a meaningful connection through the IB continuum and creates a common language for the members of the IB World. It also supports the values, aims and what IB means by "international mindedness" (Walker, Bryant, & Lee, 2014).

Students between the age of 10-16 are required to complete and meet the needs of the IB MYP. As the IB MYP is the second program in the IB continuum, it assumes the IB MYP students are ready for the demands and challenges that they have been prepared throughout the IB PYP. The IB MYP consists of three levels; Emergent, Capable and Proficient which are implemented into the curriculum according to students' experience in the IB MYP and their level. Each level's objectives and needs differ from one another in terms of understanding, knowledge and skills (IBO, Language Acquisition Teacher Support Material, 2020).

In the IB PYP, students are familiarized with the concept of transdisciplinary learning and recontextualization throughout the whole program. The term "transdisciplinarity" has got the prefix which means "across", "over", and "beyond" in Latin (Mcgowan, Brown, & Daly, 2012). Transdisciplinarity involves different disciplines using a framework which can adress common problems through discipline specific theories (Mcgowan, Brown, & Daly, 2012). The learners in the IB PYP can benefit from Rich Performance Assessment Tasks (RPATs), student directed learning, international mindedness and programme alignment between the IB PYP- IB MYP- IB DP (Drake, Savage, Reid, Bernard, & Beres, 2015).

The disciplinary boundaries still exist, however the information from these disciplines have generally been reassembled and combined. This can be contemplated as making a cake with subject areas as ingredients.

The IB MYP adds a new terminology into the program. This new terminology can be named as "interdisciplinary learning". The term "interdisciplinary" consists of the prefix

“inter” which means “among” and “between” or “in the midst of” in Latin (Mcgowan, Brown, & Daly, 2012).

“Interdisciplinarity” can be defined as a term that gives a learner opportunity to synthesize, analyze and build connections between the disciplines in a coherent way. It slightly differs from the other terms “multidisciplinary” and “transdisciplinary”. Interdisciplinary focus on building a new level of knowledge and connection between other disciplines, so in that sense it can be easily distinguishable from the terms “transdisciplinarity” and “multidisciplinarity”. Furthermore, it requires complex skills to integrate and produce in the target area. It can be considered as a melting pot, where all disciplines can come together to produce completely something new (Mcgowan, Brown, & Daly, 2012). The students shift the scope of learning from the means of transdisciplinary to interdisciplinary methods. This new understanding of concepts and strategies to teach is suitable to the needs of students and the nature of the learning process.

In the IB MYP curriculum, students can take their English lessons either as Language Acquisition or Language and Literature (IBO, Middle Years Programme Assessment Principles and Practice, 2020). The students of Language and Literature program can be defined as more capable students in terms of language skills. Some students in the Language Acquisition program can struggle in learning the target language or have difficulty in using it meaningfully in or out of the class. Contrary to the nature and philosophy of the IB, student may misunderstand the objectives and nature of learning. They can learn the language structures as drills, infinite repetitions and memorizations. This mislead strategy and false understanding can cause huge problems when students are asked to complete the assignments in the IB DP program. As, the requirements of the IB DP are based on life-long learning and critical thinking (IBO, Diploma Programme assessment Principles and Practice, 2010). The students with weak language skills can face problems while fulfilling the needs of the program.

The role of teachers and the curriculum is important in solving problems and creating effective solutions. Interdisciplinary learning and teaching can be a good way to deal with problems when applied effectively by teachers and curriculum designers.

By the help of interdisciplinary learning students can learn disciplines with a holistic approach. The holistic approach approves that the knowledge of all lessons is interrelated and should be designed to cater to the development of the whole person (Hayden & Thompson, 2011).

1.3.1 The Fourth Industrial Revolution and International Baccalaureate

As previously mentioned, the Industrial Revolutions have brought rapid changes to socio-economical, political, and educational fields. The countries that could foresee the future and understand its potential demands have shown progress and minimized the gap between educational and technological developments. The 21st-century asks learners and knowledge workers to be equipped with the necessary knowledge and skills which allow them to use the knowledge efficiently. According to the technology company "Dell", 85% of 2030's jobs have not been invented yet (Technologies, 2018). On the other hand, the percentage of job losses will have increased considerably by 2030 due to the improvements in automation technologies, Virtual Reality (VR), Artificial Intelligence (AI) and Augmented Reality (AR).

An effective educational policy can turn the impacts of automation into an advantage. In a century where robots and systems can reach the information in a second, the place of soft skills in STEM lessons will play a crucial role in revealing the unique human capabilities of individuals. According to the study held among the CEOs (Chief Executive Officer) of 15 top-companies, it has been found out that the future workplace will demand creativity-based digital, critical thinking, and collaboration skills. The combination of these skills, knowledge and human investment is the essential formula to enable national economic growth. (Economist, 2018).

Skills are divided into two groups; cognitive and non-cognitive skills. Cognitive skills are used to understand complex ideas and environments by using different forms of reasoning and thinking. On the other hand, non-cognitive skills are socially determined and developed throughout lifetime of person to overcome obstacles and adapt to changes (Zhou, 2016). The relation between the use of cognitive and non-cognitive skills play a crucial role for individuals to find place in the demanding work life. The quality of education and training can determine the improvement of these skills. Gutman andSchoon

have named these eight non-cognitive skills as self-perception of ability, motivation, perseverance, self-control, metacognitive strategies, social competencies, resilience, coping and creativity. The components of the non-cognitive skills can be based on six strong pillars; mindfulness, curiosity, courage, resilience, ethics, and leadership (Gutman & Schoon, 2013). With the awareness of the importance of the non-cognitive skills, the OECD countries started to integrate some of these skills in the national curriculum as learning objectives for each level of education (Zhou, 2016).

Meanwhile, the IB foresees the importance of human capital in the future work place and gives place to non-cognitive skills in the curriculum. These skills are shared under the name of ATL (Approaches to Learning) skills in the IB MYP curriculum. They are identified as; research, communication, self-management- social and thinking skills. ATL skills are implemented into the unit plans with the focus of "learn how to learn" in relevance. The ATL skill categories and the IB MYP ATL skill clusters are shown in the Table.3 below. In Appendix A, the ATL skills framework is shared (IBO, MYP: From principles into practice, 2014).

Table 3. The ATL Skill Categories and MYP ATL Skill Clusters

ATL skill categories	MYP ATL skill clusters
Communication	I. Communication
Social	II. Collaboration
Self- management	III. Organization IV. Affective V. Reflection
Research	VI. Information Literacy VII. Media Literacy
Thinking	VIII. Critical Thinking IX. Creative Thinking X. Transfer

The aim of the IB MYP is to prepare students to the rigorous programmes such as the IB DP and the IB CP with a smooth transition. The ATL skill categories and the IB MYP skill clusters shared in the Table.3 are applied in each level of the IB MYP and includes both general and discipline-specific skills. The expectation of these skills can be changed according to the specific needs of learners and institutions. The continuous development of these skills are achieved with ongoing feedback and process-oriented teaching & learning. Moreover, the place of ATL skills is so important in the program that it contributes to the quality of learning strategies, student engagement, and development of the IB attributes through the program.

The ATL skills are taught both implicitly and explicitly in the program. The choice between teaching implicitly or explicitly is done according to the needs and expectations of each unit plan. When chosen ATL skill is taught explicitly, the learner is assumed to take responsibility as a life-long learner. The IB MYP shares four terms to help learners identify their level of competence. In the IB MYP Teaching and Learning Guide, the terms are mentioned as;

• **Novice/beginning**—students are introduced to the skill, and can watch others performing it (observation)

• **Learner/developing**—students copy others who use the skill and use the skill with scaffolding and guidance (emulation)

• **Practitioner/using**—students employ the skill confidently and effectively (demonstration)

• **Expert/sharing**—students can show others how to use the skill and accurately assess how effectively the skill is used (self-regulation).

A concept-driven curriculum that uses ATL skills effectively enables all students to become stronger, more self-regulated learners (IBO, MYP: From principles into practice, 2014).

In addition to the IB MYP ATL skills, each step of the IB programs include character education via the ten IB attributes implemented throughout the curricula, the

IB PYP, the IB MYP, the IB DP and the IB CP. Character education can be achieved by a curriculum that aims to build an understanding of lifelong learning, support interpersonal and intrapersonal relationships both at home and workplace, develop sustainable values in a globalized world (Bialik, Bogan, Fadel, & Horvathova, 2015). Schools can organize challenging practices that can involve pedagogical activities without didactic instruction. Some examples of these beneficial practices can be debates, performances and sports. The debates, performances, sports, and inquiries can be utilized to encourage growth in mindset, moral development, competition, and collaboration.

In 2018, OECD decided to put a new area in the Programme for International Student Assessment (PISA) which can enable the assessment of global competence of students. Testing of global competence focuses on students' readiness to live and succeed in today's global economy and multicultural societies. The questions are designed with extracts from newspapers and short stories to raise international-mindedness and intercultural understanding. The Figure 4 shows the elements of the global competence (OECD, 2018).



Figure 4. The Elements of Global Competence by OECD

According to the OECD, a global competent student must;

- take action for collective well-being
- communicate ideas effectively with diverse audiences across cultures
- recognize and understand different perspectives
- investigate the world beyond (local-global-cultural) (OECD, 2018)

The world of the 21st-century is diverse and rapidly changing. Each technological innovation and change in economic and environmental settings requires individuals to adapt to the changes. This complex setting is either a challenge or an opportunity for young people. As a result, to benefit from this interconnected and evolving world, young people must learn how to exist in different societies and appreciate the cultural differences. The International Baccalaureate is aware of the importance of global competence in today's and tomorrow's world and highlights its importance in each program. As mentioned in the vision of the IB, it aims to raise open-minded global citizens. Global competence is applied from the first cycle of the IB continuum, the IB PYP. In the IB PYP, there are transdisciplinary themes which allow teachers and students to connect the learning process within other disciplines into a bigger picture to refer to global competence (Drake, Savage, Reid, Bernard, & Beres, 2015).

Some of these themes are;

- **How the world works;** inquiry into the nature of self- human relationships, communities; what it means to be a human.
- **Where we are in place and time;** inquiry into orientation in place and time; the relation between individuals and interconnected world, from local and global perspectives.
- **Sharing the planet;** inquiry into rights and responsibilities to share the finite sources; access to equal opportunities; peace and conflict resolution.

On the other hand, the transition of the educational curricula from STEM to STEAM (Science, Technology, Engineering, Arts, and Maths) can enable learners and educators to be engaged with cross-curricular learning and transferable skills. Therefore, this transition can play a key role in preparing students for the jobs which are yet to be created (Economist, 2018).

The IB creates an inquiry-based, experiential and collaborative learning environment by integrating media literacy, digital citizenship, and design-thinking practices in the curricula of the IB PYP, the IB MYP, the IB DP, and the IB CP.

The interdisciplinary framework of the IB MYP is an example of the transition from STEM to STEAM teaching and learning methods. It allows learners to foster the competencies in critical thinking, communication, collaboration, and creativity by engaging the learners in interdisciplinary and collaborative tasks and projects to lead them to discover their strengths and improve their weaknesses.

The IB MYP Personal Projects are effective tools to develop learners' 21st-century skills and attributes. They help to develop learners' metacognition and reduce dependency on the discipline based content learning. In each four stages of the Personal Project, learners are supported to be independent thinkers (IBO, Personal Project Teacher Support Material, 2021).

The stages of the IB MYP Personal Projects and their effects on learners

1- Investigating

Learners are encouraged to identify their goal and its importance in the bigger picture. To do this, learners must identify their interests, areas of research and find the relevant knowledge to be able to come up with the product. This stage makes students practice problem-solving research skills, learner-centered learning, entrepreneurship skills, and motivates learners to push the limits by thinking out of the comfort zone (IBO, Personal Project Teacher Support Material, 2021).

2- Planning

This stage requires learners to plan the process and think independently to test success and organize thought processes. This part allows learners to create ways for self-evaluation and practice self-management skills (Self-management is one of the ATL skills in the IB MYP curriculum) (IBO, MYP: From principles

into practice, 2014).

3- Taking Action

Learners can exercise agency to create a product and experience creativity. This part of the Personal Project requires critical thinking and metacognitive skills. Learner must communicate his/her purpose, product and process to his/her audience effectively.In the process of constructing a product, a high level of responsibility is necessary to articulate metacognition (IBO, Personal Project Teacher Support Material, 2021).

4- Reflection

This is the part where learner can prove to be a lifelong learner and reflect on the IB Learner Attributes and ATL skills. Learner is asked to reflect on the learning process and give objective evaluation to his/her product and process. This enables learners to make meaningful learning experience and improve themselves by changing their weaknesses to their strengths which improves their creativite thinking skills to overcome possible challenges. The IB motivates learners to learn from their mistakes and weaknesses to show better performances and challenge themselves to reveal their true potential (IBO, Middle Years Programme Assessment Principles and Practice, 2020).

1.4 Structure of the Observed Learning Outcome

According to the theory Biggs & Collis's model of Structure of the Observed Learning Outcome, interdisciplinary learning can improve the critical thinking skills and metacognitive skills of students (Ivanitskaya, Clark, Montgomery, & Primeau, 2002). It is understood that discipline-specific approaches cannot interface with other disciplines successfully. On the other hand, holistic knowledge can create a beneficial impact on the students' perspectives. A student can give more meaning and importance to language acquisition when the concepts and contexts are encountered in other disciplines as well.

The language would be more meaningful and useful to students and become an indispensable part of learning in students' minds.

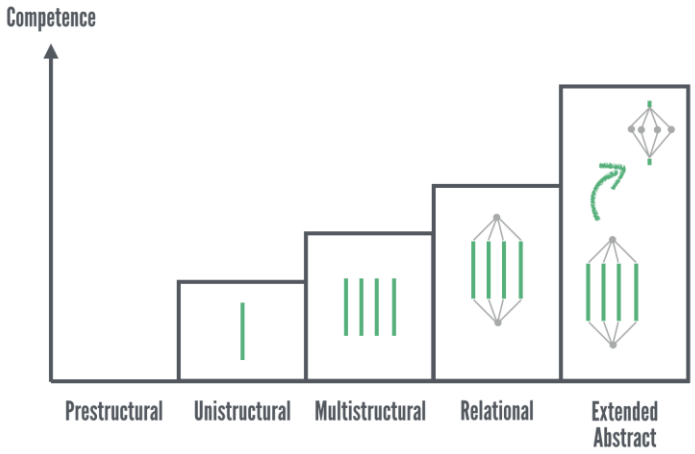


Figure 5. Biggs & Collis's Model of Structure of the Observed Learning Outcome

To see the benefits of interdisciplinary learning and interdisciplinary collaboration among the teachers, it is important to analyze students' learning processes in an interdisciplinary learning environment. This can be done with the help of action research within target groups and students.

John Dewey who developed a progressive and scientific method of problem solving believed that educators should be skeptical of teaching and involved in reflection for improvement in the democratic classroom environment (Tomal, 2010).

1.5 The Objectives of the Research

The main objective of the study is to investigate the effects of interdisciplinary teaching and learning in English classes and the impact that it creates on language acquisition students in the selected IB school, applying the IB MYP curriculum, in Turkey. To this end, the following questions are under consideration:

1. In what ways does integrating disciplines contribute to students' language learning process?

2. How does students' attitude towards English class affect the interdisciplinary understanding and language learning process?

3. What is the effect of the transition from the IB PYP to the IB MYP on language learning and interdisciplinary understanding?

4. How does inquiry-based learning affect the language learning process in the IB MYP Emergent and the IB MYP Capable levels?

5. How do students develop and put problem-solving and thinking skills into practice in the IB MYP Emergent and the IB MYP Capable levels?

6. What is the relationship between the IB MYP Emergent and the IB MYP Capable level on language learning?

1.6 The Significance of the Research

It is expected that, this study will:

1. Encourage the new possible research areas in the field of integrating interdisciplinary lessons in other disciplines with the IB MYP curriculum.

2. Shift and reshape the assessment process of learning from single discipline approach to a holistic approach which requires learners to use more than one discipline in their studies.

3. Encourage students who have difficulty in learning the target language to use the target language more meaningfully and actively both in language classes and in their daily lives.

4. Create new projects and assessment strategies that would be more suitable to the needs of the 21st-century due to interdisciplinary collaboration between different subject area teachers.

1.7 The Assumptions of the Research

In this study, it is assumed that:

The action research model which is based on the observation of the effects of interdisciplinary learning and teaching in the IB MYP class is applicable to the Turkish IB school setting.

1. The approaches and methods that use interdisciplinary learning and teaching effectively can improve the quality of English lessons.

2. Interdisciplinary learning can enable students to improve critical thinking and metacognitive skills.

3. The IB MYP lessons can provide space and opportunity for teachers from different disciplines to collaborate with each other.

1.8 The Limitations of the Research

In this study, there are some limitations:

1. The participants of the research is limited to the students of the selected IB school which has the IB MYP curriculum applicable from Grade 5 -6-7 and 8.

2. The scope of the research focuses solely on the process and effectiveness of the interdisciplinary and inquiry based learning on language acquisition.

CHAPTER 2. METHOD

This chapter includes the research design, description of the study area, participants, sampling procedures, data collection method, and data analysis. According to the descriptions based on the study, the data will be obtained from the respondents within the selected private IB continuum school. The study will also use interviews and questionnaires to get descriptions from the respondents.

2.1 Design

A case study is a specific example from a more general system. It enables researchers to understand the complex system by examining unique examples in real situations. Thus, it can provide ways to understand the abstract theories and hypotheses more clearly and meaningfully. As stated by Cohen, the contexts of case studies are unique and dynamic, they can help researchers investigate the complex system and unfolding interactions of events and people (Cohen, Manion, & Morrison, 2007).

The study is designed to be a comparative case study that focuses on the similarities and differences across the two IB MYP levels; Emergent and Capable and how they connect in terms of inquiry-based learning and language acquisition. In the selected IB continuum school, grade 5 and grade 6 level students are accepted as to be on the Emergent level, while grade 7 and grade 8 students are on the Capable level.

A comparative case study design is used to analyze and synthesize the relationship between the IB MYP levels and combine necessary data and knowledge to find answers to the particular questions stated before. The students of the two IB MYP levels attended the study. Two different likert type scale with five degrees were shared with the students. Following the questionnaires, the students were invited to the focus group interviews and share their thoughts on the particular questions stated by the researcher. The researcher also used the qualitative data gathered from the online semi-structured interviews held with English, Science, and Maths subject area teachers.

The data is collected through surveys and semi-structured interviews and data analysis techniques in relation to the effects of interdisciplinary collaboration and

planning on the success rate of students' language acquisition and development of subject-specific content in their classrooms. The use of primary and secondary sources were also crucial to check the respondent validation and reflexivity with triangulation method. The researcher used both the qualitative and quantitative data to find answers to the research questions.

2.2 Participants

The participants of the study are 194 students from the IB MYP Emergent and Capable Levels (Grade 5, 6, 7 and 8), 8 related subject-area (English, Maths and Science) IB MYP teachers of the selected private IB continuum school in Istanbul. The Table 4 illustrates the demographic profile of the sample.

Table 4. Demographic Characteristics of The Sample

Variables		*f*	*%*
Gender	Female	105	54,1
	Male	89	45,9
Age	9-11	79	40,7
	11-13	99	51
	13-15	16	8,2
Level	Emergent	117	60,3
	Capable	77	39,6
Years of Learning English	0-2	2	1
	2-4	14	7,2
	4-6	38	19,6
	6+	140	72,2
PYP Experience	Yes	149	76,8
	No	45	23,2
Years in IB Program	0-2	58	29,9
	2-4	36	18,6
	4-6	41	21,1
	6+	59	30,4
Total		194	100

The students were almost similar in their socio-economic background. The majority of the parents can speak a foreign language and has a university-level education. The relation between the variables of parents' education level and knowledge of a foreign language is shared with the frequencies and percentages in Table 5 below.

Table 5. The Socio-Economic Characteristics of the Respondents' Parents

Variables		*f*	*%*
Mother's Level of Education	Elementary	5	3,2
	High School	11	7,1
	Bachelor Degree	78	50,3
	Master's degree	44	28,4
	Ph.D Degree	17	11
Father's Level of Education	Elementary	1	0,6
	High School	15	9,7
	Bachelor Degree	73	47,1
	Master's degree	47	30,3
	Ph.D Degree	19	12,3
A Knowledge of Foreign Language (Mother)	Yes	140	90,3
	No	15	9,7
A Knowledge of Foreign Language (Father)	Yes	134	86,5
	No	21	13,5
Total		155	100

2.3 Instruments

The researcher used both qualitative and quantitative data collection tools to gather necessary data to find answers to the research questions. The quantitative data was collected with two different scales. The scales focus on the students' attitude towards English classes and inquiry-based learning. The data collected with the scales was supported by the semi-structured focus group interviews with students and the IB MYP subject-area teachers. The research questions and how each data collection tool was used to find answers to these questions are shared in Table 6 below.

Table 6. The Relationship Between the Data Collection Tools and Research Questions

	Research Question	Subject	Data Collection Tool
1.	In what ways does integrating disciplines contribute to students' language learning process?	The IB MYP English & Science & Maths Subject Area Teachers	Semi-structured Group Interviews
2.	How does students' attitude towards English class affect the interdisciplinary understanding and language learning process?	English Teachers	Semi-structured Group Interviews & The Attitude Scale for Elementary English Course
3.	What is the effect of the transition from the IB PYP to the IB MYP on language learning and interdisciplinary understanding?	The IB MYP Emergent & Capable Level Students	Semi-structured Group Interviews & The Attitude Scale for Elementary English Course
4.	How does inquiry-based learning affect the language learning process in the IB MYP Emergent and the IB MYP Capable levels?	The IB MYP Emergent & Capable Level Students	Semi-structured Group Interviews & The Attitude Scale towards Research-Inquiry for Secondary School Students

5.	How do students develop and put problem-solving and thinking skills into practice in the IB MYP Emergent and the IB MYP Capable levels?	The IB MYP Emergent & Capable Level Students	Semi-structured Group Interviews & The Attitude Scale towards Research-Inquiry for Secondary School Students
6.	What is the relationship between the IB MYP Emergent and the IB MYP Capable level on language learning?	The IB MYP Emergent & Capable Level Students	Semi-structured Group Interviews & The Attitude Scale for Elementary English Course

2.3.1 Quantitative Data Collection Instruments

The research questions "How does students' attitude towards English class affect the interdisciplinary understanding and language learning process?", "What is the effect of the transition from the IB PYP to the IB MYP on language learning and interdisciplinary understanding?", "How does inquiry-based learning affect the language learning process in the IB MYP Emergent and the IB MYP Capable levels?", "How do students develop and put problem-solving and thinking skills into practice in the IB MYP Emergent and the IB MYP Capable levels?" and "What is the relationship between the IB MYP Emergent and the IB MYP Capable level on language learning?" are tried to be answered with the help of the two different likert type scales with five degrees.

2.3.1.1 The Attitude Scale towards Research- Inquiry for Secondary School Students

The scale "ASYTÖ" (Araştırma Sorgulamaya Yönelik Tutum Ölçeği) developed by Ozan, Korkmaz & Karamustafaoğlu (2016) aims to examine the middle school students' attitude towards inquiry-based learning and research. The reliability of the scale was calculated by implementing the Cronbach Alpha reliability coefficient, the correlation value between two equal halves, the Spearman-Brown formula, and Guttmannsplit-half reliability formulae. As a result, the Cronbach Alpha reliability coefficient 0,491; Spearman Brown reliability coefficient 0,659; Guttman Split-Half reliability value 0,756 was found (Ozan, Korkmaz, & Karamustafaoğlu, 2016). The

number of respondents who answered the scale is 155. The respondents are the students from the IB MYP Emergent and Capable levels (Grade 5, 6, 7 and 8) of the selected private IB Continuum school in Istanbul. ASYTÖ includes thirteen items and three factors. It is a likert type scale with five degrees. The respondents were asked to give the most suitable answer to the statements by choosing one of the five degrees. The degrees of ASYTÖ are stated as "Strongly Agree:5", "Agree:4", "Not Sure:3", "Disagree:2", "Strongly Disagree:1". After implementing the scale, the lowest score obtained from the results is 13, while the highest score is 65. The factors that are included in the scale are listed as "Curiosity","Avoiding",and "Signification". The "Curiosity" and "Signification" factors include positive statements, however the second dimension "Avoiding" includes only negative statements. The factors of the scale and the statements related to the factors are shared in the Table 7 below (Ozan, Korkmaz, & Karamustafaoğlu, 2016).

Table 7. The Pattern of Factors and Statements of ASYTÖ

Factors	Statements	Number of Statements
Curiosity	1, 2, 3, 4	4
Avoiding	5, 6, 7, 8, 9	5
Signification	10, 11, 12, 13	4
Total		13

2.3.1.2 The Attitude Scale for Elementary English Course

The Attitude Scale for Elementary English Course was developed by Baş (2012) to examine the middle school students' attitude towards English classes (Baş, 2012). The scale is named "The Attitude Scale for Elementary English Course" as when the scale was developed, the elementary education included the middle school levels (Grade 5, Grade 6, Grade 7,and Grade 8). The reliability of the scale was found by implementing the Cronbach Alpha reliability coefficient and Spearman-Brown split half correlation. The Cronbach's Alpha value was found as 0.92. The split half test correlation of the scale was found as 0.83 (Baş, 2012). The number of respondents who answered the scale is 194. The respondents are the students from the IB MYP Emergent and Capable levels (Grade 5, 6, 7 and 8) of the selected private IB continuum school in Istanbul. The scale helps students reflect their opinions by choosing the most suitable degree from one to five

for each statement of the scale. The degrees are shared as Strongly Disagree (1), Disagree (2), Not sure (3), Agree (4), Strongly Agree (5). There are five factors with fifteen positive and twelve negative statements included in the scale. The significant correlation at 0.01 level among the factors of the scale was shared by Baş (2012) to prove the reliability and validity of the scale. The factors of the scale are given as; (i) sensitivity, (ii) consciousness, (iii) importance, (iv) methods and materials and (v) language and culture. The pattern of factors and statements are shared in Table 8 below.

Table 8. The Pattern of Factors and Statements of the Attitude Scale for Elementary English Course

Factors	Statements	Number of Statements
Sensitivity	1, 2, 3, 4, 5, 10	6
Consciousness	6, 8, 9, 18, 26	5
Importance	11, 12, 14, 16, 21, 22, 24, 25	8
Methods and Materials	13, 15, 19, 23, 27	5
Language and Culture	7, 17, 20	3
Total		27

2.3.2 Qualitative Data Collection Instruments

The literature review of the primary and secondary sources; semi-structured interviews with students and teachers are used to answer the research questions "In what ways does integrating disciplines contribute to students' language learning process?", "How does students' attitude towards English class affect the interdisciplinary understanding and language learning process?", "What is the effect of the transition from the IB PYP to the IB MYP on language learning and interdisciplinary understanding?", "How does inquiry-based learning affect the language learning process in the IB MYP Emergent and the IB MYP Capable levels?", "How do students develop and put problem-solving and thinking skills into practice in the IB MYP Emergent and the IB MYP Capable levels?", "What is the relationship between the IB MYP Emergent and the IB MYP Capable level on language learning?".

2.3.2.1 Semi-structured Focus Group Interviews with Students

Interviews are flexible tools which help researchers collect data and fill in the missing gaps of the quantitative data. They can also use the multi-sensory channels to interpret the data more effectively. The multi-sensory channels are stated as; the verbal, non-verbal, spoken and heard. Furthermore, interviews enable both interviewers and interviewees to explain the situation from their own point of view. Therefore, interviews are not only data collection tools, but also an essential part of life (Cohen, Manion, & Morrison, 2007).

There are some factors that can affect the nature of an interview. These factors focus on the relationship between the interviewer and the interviewee in terms of mutual trust, social distance, trust, curiosity, naturalness and interviewer's control on the interview. Among these factors, curiosity plays a crucial role to provide opportunity to hear respondents' stories and discover their feelings. To have an effective interview, the purpose of the interview should be to gather data from respondent's opinions to identify the relationship between the variables.

In this study, semi-structured group interviews are held. Semi-structured interviews are powerful data collection tools which make it possible to further explore some matters arising from the observation (Bogdan & Biklen, 1992). The researcher can also use non-verbal cues, bland encouragements, 'nonleading' leads, active listening and low-inference paraphrasing to medium- and high-inference paraphrasing (Cohen, Manion, & Morrison, 2007). Moreover, Morrison stated that the design of questions for a semi-structured interview must consider prompts and probes. Prompts and probes can be used to support the understanding of the interviewee on the topic and provide necessary clarification by elaborating and providing details. While prompts help interviewer to explain the interview topic, probes are used to ask questions to interviewees to qualify and extend their response. The types of probes can be follow-up questions, why questions or sometimes simple short pauses to allow respondent to consider and reflect on the shared question. Therefore, a succesful interview must adress a good amount of details and comprehensiveness (Morrison, 1993).

Focus groups are used to collect data through the interaction among the respondents, rather than only relying on the individual responses. They allow respondents to discuss on a theme or a question given by the researcher. In addition, focus groups can help participants feel more comfortable. As the respondents of the study are middle school students, a natural interaction among the respondents and the researcher provides more objective and genuine responses on the questions.

The themes of the focus group interaction were on inquiry-based learning, research skills, the IB education and the effect of interdisciplinarity. There are five focus group interviews held with the middle school students. The two of them were with the fifth graders, while the other three focus group interviews were with sixth, seventh and eighth graders. The researcher divided the focus group participants in terms of the IB experience. The participants of the group were transfer students from public schools in İstanbul, while the other group's participants had previous IB experience. Because of the Covid-19 outbreak, all of the interviews were held online rather than face to face. Although the interviews had been designed to be 30 minutes, the respondents' motivation and encouraged participation extended the responses and the time allocated for the interviews to almost 45 minutes. The respondents were happy to take part in the interviews and share their personal opinions on the directed questions by the researcher. During the interviews, the respondents also added further details which contribute to the data collected through scales. Table 9 shows the interview questions below. The use of probes were also helpful to eliminate the necessary data and extend the responses with some follow-up questions.

Table 9. The Relation of the Themes and Interview Questions

Themes	Questions
Inquiry-Based Learning	1. What helps you understand better in English class?
IB Education	2. What do you think about the IB education?
Interdisciplinarity	3. Can you make meaningful connections between different lessons? 4. If so, what are some examples of these meaningful connections?
Problem-Solving	5. Do you use what you learn in class to solve problems in your daily life? 6. If so, can you give some examples from your own life?
Research Skills	7. Can you choose or select the right information from different sources? 8. If so, are there any strategies that you apply? 9. Do you think they are effective enough? 10. What other strategies do you think you can apply to select the right information?

2.3.2.2 Semi-structured Focus Group Interviews with Teachers

Dörnyei pointed out that interview includes turn-taking conventions, the shared roles and cultural knowledge of participants (Dörnyei, 2007). Although there are many other qualitative research methods such as observations and journals, interview is the most applied method. The study uses the focus-group interviews which allow participants to share their opinions freely and benefit from the natural interaction taking place in the focus group interview. The groups are sampled homogeneously in terms of subject-areas of the participant teachers. The first group includes four IB MYP Language Acquisition teachers, the second group consists of two IB MYP Maths and two IB MYP Science teachers. The interviews are held online and took between thirty to fourty minutes. The interview questions aim to reveal the opinions of teachers on the the themes of

interdisciplinary collaboration, problem-solving, research skills and inquiry-based teaching in the IB MYP. The relation between the themes and questions are shared in Table 10 below.

Table 10. The Relation of the Themes and Interview Questions

Themes	Questions
Inquiry-Based Learning	1- What do you think about the importance of inquiry-based learning in teaching? 2- Do you think inquiry is a fundamental part of IB curriculum?
IB Education	3- IB states that "Every teacher is a language teacher", Do you agree with this statement? Why? Why not?
Interdisciplinarity	4- What do you think of interdisciplinary collaboration on teaching? 5- Do you think it is effective to teach language skills?
Problem-Solving	6- Do you think students can combine knowledge, understanding and skills to create products or solutions?
Research Skills	7- What do you think on students' ability to select relevant and reliable information from various sources for a specific task?

2.3.2.3 Literature Review of the Primary and Secondary Sources

Case studies must be considered with careful documentation of the related field and a detailed anaylsis both of the qualitative and quantitative data. They focus on the ways to enlighten a set of ideas of decisions to explain why they were implemented and what the results of these choices. The content anaylsis of the research includes the mission

and vision of IB; the unit plans, IDU plans and subject-area guides of the IB PYP, the IB MYP and the IB DP programmes; the reports shared by OECD to show the characteristics of the situation; the articles and essays written by the experts in the field of education. The documents of the IB programmes are used to define the setting and details to create the research questions. The mission and vision of the IB are also considered to shape the interview questions. The relation between interdisciplinary learning and language acquisition classes are examined for answers.

2.4 Procedure

The study includes the application of two scales and semi-structured focus-group interviews with students and teachers. The respondents were informed about the purpose of the study, the researcher also pointed out that the all information gathered through the scales and interviews is kept confidential. The focus-group interviews were held on an online platform. Both the students and teachers felt comfortable to share their genuine thoughts and opinions on the themes and questions directed by the reseacher. The data collection procedure of the study is shared in Table 11.

Table 11. The Data Collection Procedure of the Study

Literature Review of the Area	Researcher
The Attitude Scale towards Research-Inquiry for Secondary School Students	Middle School Students of the IB MYP Emergent and the IB MYP Capable Levels (Grade 5-6-7-8) (n=155)
The Attitude Scale for Elementary English Course	Middle Schools Students of the IB MYP Emergent and the IB MYP Capable Levels (Grade 5-6-7-8) (n=194)
Focus Group Interview 1	The IB MYP Emergent Level -Grade 5 Transfer Students (n=7)
Focus Group Interview 2	The IB MYP Emergent Level -Grade 5 Students (n=6)
Focus Group Interview 3	The IB MYP Emergent Level -Grade 6 Students (n= 5)

Focus Group Interview 4	The IB MYP Capable Level -Grade 7 Students (n= 3)
Focus Group Interview 5	The IB MYP Capable Level -Grade 8 Students (n=7)
Focus Group Interview 6	The IB MYP English Teachers (n=4)
Focus Group Interview	The IB MYP Subject-area Teachers of Science and Maths (n=4)

2.5 Data Analysis

The study used qualitative and quantitative data collection and mixed method approach to find answers to the research questions. The data is collected sequentially to support the finding from the qualitative data collection. Among the six approaches put forward by Creswell, the sequential explanatory design is chosen to analyze the quantitative and qualitative data effectively (Creswell, 2009). In the first phase of the sequential explanatory design, the collection and the analysis of the quantitative data takes place. The first phase is followed by the collection and analysis of the qualitative data to build on the results of first phase and interpret the results by collecting necessary qualitative data. Although the qualitative and quantitative data collection phase might look separate, they are connected.

2.5.1 Quantitative Data Analysis

The ASYTÖ scale and the Attitude Scale for Elementary English Course were answered by middle school students and the data gathered was analyzed with Statistical Package for the Social Sciences (SPSS) Program. The SPSS software is used widely to analyze and manage the complex statistical data of research in social studies. The negative statements in the ASYTÖ scale were analyzed by reverse coding. The researcher found the frequency, mode, median and standard deviation of the gathered data by using the program meticulously.

2.5.2 Qualitative Data Analysis

The protocols of content analysis are used to analyze the qualitative data gathered by semi-structured focus group interviews with middle school students and semi-structured group interviews with English, science and maths teachers. Content analysis is used to reveal data of a researched social context and the factors. Therefore, the use of content analysis method provides an opportunity to form the basis of comparative or cross-cultural studies (Cohen, Manion, & Morrison, 2007). The content analysis has got two types of processes: inductive and deductive. This study applies the deductive approach of content analysis to clarify the data.

Content analysis involves three main phases: preparation, organization and reporting of results. The preparation phase includes the collection of suitable data and explaining it. In the organization phase, researchers review the data for content and divide into identified categories. It is important for researchers to provide a clear and valid cetagorization representing the concepts. In the last phase of the analysis, the reporting phase, results are shared and interpreted by the identified categories to describe the phenomenon (Dörnyei, 2007)

CHAPTER 3. RESULTS

This part of the study aims to find answers to the research questions by analyzing both qualitative and quantitative data gathered from the participants. As the data is from a normal distribution, which is checked by Normality tests and Post-Hoc tests. The Skewness and Kurtosis values of the data are used to determine the symmetry and peakedness of the distribution (Pallant, 2010). To analyze the quantitative data, parametric tests; Independent samples T-test, analysis of variance, and ANOVA test are applied.

3.1. Results for the Scales

3.1.1. The Attitude Scale towards Research- Inquiry for Secondary School Students

The attitude towards research-inquiry learning of the students from the IB MYP Emergent and Capable levels (Grade 5,6,7 and 8) of the selected IB continuum school are determined with the help of the ASYTÖ scale developed by Ozan, Korkmaz & Karamustafaoğlu (2016). To assess the findings of the scale three factors are taken into consideration. These factors are Curiosity, Avoiding, and Signification (Ozan, Korkmaz, & Karamustafaoğlu, 2016).

Options	Score Range
Strongly Disagree	1.00-1.80
Disagree	1.81-2.60
Not Sure	2.61-3.40
Agree	3.41-4.20
Strongly Agree	4.21-5.00

The score collected from the findings of the scale is shared in the Table 12 below.

Table 12. The Score Average of ASYTÖ Scale

Scale Range	*N*	*Minimum Score*	*Maximum Score*	*Mean*
13-65	145	33	65	56,4

Ozan, Korkmaz, & Karamustafaoğlu (2016) stated that the lowest score is 13 and the highest score is 65 as a result of implementing the scale (Ozan, Korkmaz, & Karamustafaoğlu, 2016). As it is shared in the Table 12 above, the minimum score obtained from the partipants is 33, while the maximum score is 65. When the mean of the scale, 56,4, is considered, it can be said that the participants' attitude towards research-inquiry based learning is positive and considerably high.

The data gathered from the scale on each factor is analyzed with descriptive statistics. The findings of the descriptive statistics are shared in the Table 13 below.

Table 13. The Descriptive Statistics and Frequencies of the Factors

Descriptive Statistics

		Curiosity	Avoiding	Signification
N	Valid	155	152	155
	Missing	1	4	1
Mean		4,4097	4,3563	4,2177
Median		4,5000	4,6000	4,2500
Std. Deviation		,59421	,66741	,74767
Minimum		2,50	2,60	1,75
Maximum		5,00	5,00	5,00

As it is shown in the Table 13 above, the students who took part in the study achieves a high level in each of the three factors; curiosity, avoiding and signification. When these three factors are compared within each other, there is a slight difference among them. While the curiosity factor (x= 4.4097, ss=0.59) and avoiding factor (x= 4.3563, ss=0.66) are the highest, the signification factor (x= 4.2177, ss=0.74).

3.1.2. The Attitude Scale for Elementary English Course

To understand the students from the IB MYP Emergent and Capable levels (Grade 5,6,7 and 8) of the selected IB continuum school, the Attitude Scale for Elementary English course is applied. Although the number of questions and factors are more than the ASYTÖ scale, the number of participants who completed the scale is higher. "The Attitude Scale for Elementary English Course" involves five different factors; sensitivity, consciousness, importance, methods and materials, language and culture.

Options	Score Range
Strongly Disagree	1.00-1.80
Disagree	1.81-2.60
Not Sure	2.61-3.40
Agree	3.41-4.20
Strongly Agree	4.21-5.00

The score collected from the findings of the scale is shared in the Table 14 below.

Table 14. The Score Average of the Attitude Scale for Elementary English Course

Scale Range	*N*	Minimum Score	Maximum Score	Mean
35-175	151	61	94	78,95

Table 14 shows that the lowest score achieved with the scale is 61, while the highest score is 94. When the scale range is considered, it can be said that the Grade 5,6,7 and 8 students' towards English course is above the average.The data gathered from the scale on each factor is analyzed with descriptive statistics. The findings of the descriptive statistics are shared in Table 15.

Table 15. The Descriptive Statistics and Frequency of the Factors

Decsriptive Statistics

		Importance	Sensitivity	Consciousness	Methods and Material	Language and Culture
N	Valid	181	192	168	192	192
	Missing	11	0	24	0	0
Mean		2,4991	2,6363	2,4482	4,1904	3,3333
Median		2,5000	2,5000	2,4000	4,4000	3,3333
Std. Deviation		,23601	,44679	,21521	,76054	,62895
Minimum		1,75	1,33	1,80	1,20	1,33
Maximum		3,00	4,00	3,20	5,00	5,00

As it can be seen in the Table 15 above, the students' attitude towards the five factors show some differences. While the lowest means are achieved in the consciousness factor (x=2.4482, ss=0.21) and importance factor (x=2.4991, ss=0.23), the highest means are gathered in the methods and material factor (x=4.1904, ss=0.76), language and culture factor (x=3.3333, ss=0.62) and sensitivity factor (x=2.6363, ss=0.44). According to this information, it can be stated that the students are found of the materials and methods used to teach in English classes. Moreover, the students like to use English to communicate with people from different cultures and to become an open-minded global citizen as it is stated in the vision and mission of International Baccalaurate (IBO, Language Acquisition Teacher Support Material, 2020). Although the students enjoy learning English, they are not very sure about the importance of it in their lives.

3.2. Interdisciplinarity in the Emergent and Capable Levels of the IB MYP

To meet the objectives of the English class, students are encouraged to be engaged in activities focusing on the macro skills of language such as listening, reading, writing, and speaking. The different phases of the IB MYP enable these activities to be tailor-

made and specifically adapted to the needs of students and the level. These phases are listed as; emergent, capable and proficient. The levels of the phases and their objectives are shared in the Table 16 below (IBO, Language Acquisition Teacher Support Material, 2020).

Table 16. The IB MYP Levels

Level	Phases	Objectives
Emergent Level	1-2	Students are supported to use the target language.
Capable Level	3-4	Students are expected to ask and answer questions in the target language.
Proficient Level	5-6	Students are expected to ask and answer questions in the target language.

In the selected IB continuum school, the students meet with the IB MYP at Grade 5 and continues to be involved in it until the end of Grade 10, which means the IB MYP journey of a student starts at the first year of middle school and goes until the second year at high school. This combination enables a smooth transition from middle school to high school studies. The Grade level and the IB MYP level allocations are shared in the Table 17 below.

Table 17. The IB MYP Level and Grade Level Allocations

Grade Level	MYP Phase & Level
Grade 5	2- Emergent
Grade 6	2- Emergent
Grade 7	3- Capable
Grade 8	4- Capable
Grade 9	5- Proficient
Grade 10	6- Proficient

As shown in the Table 18 below, the participants of the study are from Grade 5,6,7 and 8. While the highest frequency of participant is achieved in Grade 5, the lowest frequency of participant is in Grade 8. This low participation of Grade 8 students is linked to their busy schedule and stressful preparation for the national high school entrance exam which is taken at the end of Grade 8. The choice of the Grade levels shown in Table 18 below apply the objectives of Emergent and Capable IB MYP levels.

Table 18. The Grade Levels of Participants

Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Emergent 5	68	35,4	35,4	35,4
	Emergent 6	43	22,4	22,4	57,8
	Capable 7	53	27,6	27,6	85,4
	Capable 8	28	14,6	14,6	100,0
	Total	192	100,0	100,0	

As the students' academic readiness and prior knowledge in the IB program is adequate, the middle school students start from Phase 2 in language acquisition. As it is shared in Table 19 below, the 76,6 % of the participants were previously the students of

the IB PYP, while the 23,4% of the participants did not take part in the IB PYP before. These students are the transfer students who joined the selected IB school before the year 2021. As Grade 5 has an alternative program designed for transfer students with weak English language skills compared to the criteria of the school's curricula, the majority of the transfer students are found in Grade 5. However, they are still on the IB MYP Emergent level. The qualitative and quantitative findings are used to determine the answers for the research questions in these two IB MYP levels.

Table 19. The IB PYP Experience of Participants

PYP Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	147	76,6	76,6	76,6
	No	45	23,4	23,4	100,0
	Total	192	100,0	100,0	

Transdisciplinarity is replaced by interdisciplinarity in middle school starting from grade 5 level (IBO, Language Acquisition Teacher Support Material, 2020). In order to analyze the effect of having the IB PYP experience on English classes in middle school, Levene's Test for Equality is applied. The results of Levene's Test for Equality, are represented in Table 20**.** The analysis shows that there was not a statistically significant difference ($p > 0.05$) of having IB PYP experience in English classes.

Table 20. Results of Levene's Test of Equality

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*
Importance	,112	,739	-1,114	179	,267
			-1,084	67,274	,282
Sensitivity	1,009	,317	1,389	190	,133
			1,516	84,810	,823
Consciousness	6,453	,012	,224	166	,850
			,191	57,441	,144
Methods and Materials	2,698	,102	-1,468	190	,144
			-1,667	91,723	,099
Language and Culture	,542	,462	-,180	190	,857
			-,185	76,111	,854

Besides, the interdisciplinary unit plans and activities which enable different disciplines to collaborate and create a more meaningful understanding of the content in each level, the selected IB continuum school uses English as the medium of instruction in science and maths classes in middle school and high school. Therefore, the students' level of English and their progress are other factors to determine the success level in science and maths classes. The descriptive statistics of the study shows that the majority of the students have English learning experience more than six years (*f* = 71,4%). The statistics shared in Table 21 shows us the frequency of English learning experience.

Table 21. The Frequency of English Learning Experience

English Learning Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-2	2	1,0	1,0	1,0
	2-4	14	7,3	7,3	8,3
	4-6	39	20,3	20,3	28,6
	6+	137	71,4	71,4	100,0
	Total	192	100,0	100,0	

3.2.1 Interdisciplinary Teaching and Learning in the Emergent and Capable Levels of the IB MYP

The selected IB continuum school uses English as the medium of instruction in maths and science classes between Grade 5 and Grade 12. This choice of the second language as the medium of instruction gives students oppurtunities to relate what they learn in English class to maths and science classes.

According to the interviews done with each Grade level, it can be said that students are familiar with the concept of interdisciplinarity and making connections between different subject groups. On the other hand, the students' point of view on interdisciplinarity and how they prove it shows some differences among Grade levels.The extracts from the semi-structured interviews give enough evidence on the different understanding of interdisciplinarity among Grade levels.

Table 22. Semi-Structured Students' Interview Notes

IB MYP Level	Grade Level	
IB MYP Emergent Level	Intensive Grade 5	" We have some projects which we did not have at our previous school, these projects help us connect two lessons. Also, the given homework is connected to these projects."
		" We have two IDU projects this year, one with German & ICT and the other one is with Arts & Visual Arts."
	Grade 5	" We have Cultures project this year, we learned a lot about different cultures and we can connect this information with social studies class."
	Grade 6	" IB is important for our future, we learn different subjects and some in English; it is harder than learning in Turkish."
		" Learning English can help us understand maths and science easier. It is important to learn maths and science in English, because we can study subjects related to maths and science abroad easily."
		" Lessons have the key concepts that can help us make connections between different lessons."

IB MYP Capable Level	Grade 7	" When we discuss on something, we can make the connections better."
		"We had an IDU project in Grade 6 with physical education and English classes."
		" We are doing these things also in our lives which makes them more meaningful."
	Grade 8	"I feel more capable of using English."
		" In the mathematics assessment, there was a question about Malala's birthday." (There is the unit of Human Rights in English class in Grade 8, the students had a chance to read about Malala's life and listen to her speech made in UN assembly.)
		"Learning maths and science in English can be a problem for the national high school entrance exam, I think it is better to learn them in Turkish in Grade 8."

In both IB MYP levels, the students are knowledgeable on the concept of interdisciplinary learning. Although the time of the IB instruction has been only for six months in Intensive English Grade 5, mostly in online education, the students have already understood the importance of interdisciplinarity and how it is achieved by Interdisciplinary Units (IDU). The students in the IB MYP Emergent level have also highlighted the benefits of learning maths and science in English for their future opportunities and how they use what they learn in one class to understand the content of different disciplines by making connections.

In the semi-structured interview of Grade 6 students, a student mentioned the importance of key concepts to make connections between different disciplines. Global contexts, key concepts and related concepts can play a great role in establishing

connections and creating opportunities and enough space for interdisciplinary collaboration. In other words, it is also important for a discipline to find similarities in terms of statement of inquiry and global context to find possible connections to have with another discipline effectively.

Furthermore, in the IB MYP capable level, the students have also mentioned the importance of learning English to understand maths and science classes efficiently. The students can feel more capable of using the English language and recognize the small interdisciplinary details among different disciplines.

In order to analyze the effect of having the IB experience on English classes in middle school, One-way ANOVA test is applied. The results of One-way ANOVA, are represented in Table 22. The analysis shows that there was not a statistically significant difference ($p > 0.05$) of having the IB experience in English classes.

Table 23. Results of One-Way Anova

ANOVA

		SS	*df*	*MS*	*F*	*Sig.*
Importance	Between Groups	,091	3	,030	,542	,654
	Within Groups	9,934	177	,056		
	Total	10,026	180			
Sensitivity	Between Groups	,520	3	,173	,866	,460
	Within Groups	37,609	188	,200		
	Total	38,128	191			
Consciousness	Between Groups	,122	3	,041	,874	,456
	Within Groups	7,613	164	,046		
	Total	7,734	167			
Methods and Materials	Between Groups	1,033	3	,344	,592	,621
	Within Groups	109,446	188	,582		
	Total	110,480	191			
Language and Culture	Between Groups	1,398	3	,466	1,182	,318
	Within Groups	74,157	188	,394		
	Total	75,556	191			

According to the results of the ANOVA test, it is found out that the students with less IB experience also gives importance to learning English and enjoys the materials and methods used in English class. Moreover, the awarenes of the students towards learning language and using it to understand different cultures does not show any significant difference according to the amount of IB experience.

However, the national high school entrance exam is another important factor effecting the curriculum and the objectives of the Grade level, the Grade 8 students stated that they would prefer Turkish as a language of instruction in maths and science classes to English. They believe that learning maths and science in English, where they have to pass a standardized test with Turkish language does not contribute to their learning process.

3.2.2 Interdisciplinary Collaboration in the Emergent and Capable Levels of IB MYP

The IB MYP Program model focuses on some key objectives that determine the quality and achievement of the program. One of these key objectives is "*An organized and aligned structure of subject groups or disciplines*" and it is represented in the first cycle of the program model as shown in the Figure 6 below (IBO, MYP: From principles into practice, 2014).

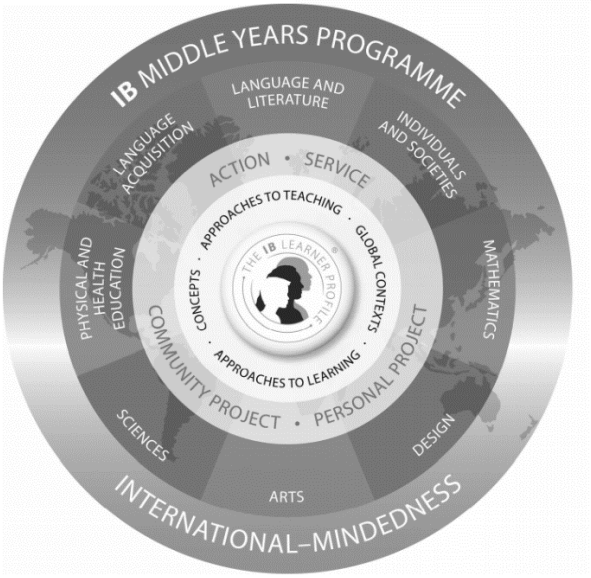


Figure 6. The Program Model of the IB MYP

To observe the place and importance of interdisciplinary collaboration both for English, mathematics and science teachers, semi-structured interviews were held. While one group consisted of only English teachers, the other group participants were science and mathematics teachers. In both semi-structured interviews, the participants drew attention to the use of IDU plans in teaching activities and how the plan must be done

accordingly. The majority of the participants defined the IDU as collaborating with other subject groups to reinforce the learning process and make meaningful connections to see the big picture of learning. Moreover, the participants also mentioned the application of the skills from different disciplines to find strategies and solutions to create better products. Table 24 below shows some example interdisciplinary ideas of the selected IB continuum school.

Table 24. The Interdisciplinary Examples of Subject Groups

MYP Level	Grade Level	Interdisciplinary Subject 1	Interdisciplinary Subject 2	Topic of Interdisciplinarity
Emergent	Grade 5	Physical Education	Mathematics	Fractions
Emergent	Grade 6	Physical Education	English	Types of Communication
Capable	Grade 7	Social Studies	Mathematics	Population Growth
Capable	Grade 8	Science	Mathematics	Climate Change

Each subject group defined interdisciplinarity in a way that can be linked to the nature of the each discipline. In the semi-structured interview, the science teachers mentioned how the content of science is related to the daily life and how science must collaborate with other disciplines such as mathematics and English to produce solutions and strategies. In addition, the science teachers also mentioned the students' language skills and readines to understand the content of the lesson and use the terminology effectively. On the other hand, mathematics teachers indicated that mathematics has its own language; the students' language skills cannot directly affect the achievement level unless the student is a low-achiever in language class. The mathematics teachers believe that if a student has the basic knowledge of the English language and shows necessary readiness for mathematics, the student is generally expected to achieve the objectives of the discipline. The mathematics teachers also highlighted the importance of collaborating with other disciplines to help students make more meaningful connections with real life and understand the mathematical patterns.

Furthermore, the difference between the IB MYP levels; capable and emergent levels is mentioned by the applicants to emphasize the readiness of the students to achieve meaningful results in IDU activities. A student's readiness in English language skills contributes to the student's understanding of the task and thus to the IDU activities.

Regardless of their subject areas, the participants of the semi-structured interviews shared the same belief on the nature of interdisciplinary collaboration. The belief is if the connections and collaboration between different disciplines can be achieved naturally, the purpose of the interdisciplinary units are meaningful and effective. On the contrary if interdisciplinarity is achieved with a forced curriculum and unreasonable connections, the purpose of the interdisciplinary units do not serve to the main goal of the IB which is connecting different subject groups to make learning more meaningful and natural.

3.3. Inquiry-based Learning in the IB MYP

The IB establishes its philosophy on a meaningful education which constructs meaning and make sense of the world. This is achieved by the cycle of Inquiry (asking), Action (doing) and Reflection (thinking).

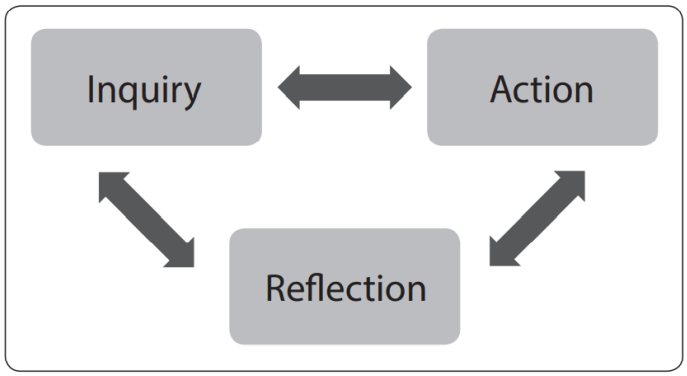


Figure 7. The Key Elements of the IB Education

The constructivist approach of the IB allows students to share different perspectives and encourage them as life long learners both as individuals of the community and collaborating with others. Therefore, a community of learners are

prepared to solve complex problems, create effective solutions and make meaningful connections with the real world (IBO, MYP: From principles into practice, 2014).

The first part of the cycle, Inquiry plays an important role in conducting of the IB programmes. Inquiry can be found both in taught and assessed curriculum of each discipline. This approach is designed to use students' prior knowledge to determine their readiness and establish a basis to start the new learning through students' curiosity. Moreover, inquiry supports the application of conceptual learning by taking learners' attention to the "big idea" as it is the statement of inquiry in the IB MYP. The statement of inquiries or concepts determine the necessary field where learners can share their original ideas and discuss them with the community. In other words, inquiry can drive to a deeper understanding of a topic and possibility of transmission of knowledge within different disciplines, which can also be named as interdisciplinarity.

To understand the attitude of the participants to the inquiry based learning, ASYTÖ scale was applied. The results of the scale shows that there is a significant difference between the Emergent and Capable levels when Avoiding factor is considered ($p > 0.05$), however for other two factors of the scale; Curiosity and Significance there is no significant difference among the levels.

Table 25. Results of One-Way Anova

ANOVA

		SS	*df*	*MS*	*F*	*Sig.*
Curiosity	Between Groups	1,936	3	,645	1,858	,139
	Within Groups	52,438	151	,347		
	Total	54,374	154			
Avoiding	Between Groups	5,214	3	1,738	4,146	,007
	Within Groups	62,047	148	,419		
	Total	67,262	151			
Significance	Between Groups	3,067	3	1,022	1,859	,139
	Within Groups	83,022	151	,550		
	Total	86,089	154			

The IB offers four programmes: Primary Years Programme (PYP), the Middle Years Programme (MYP), the Diploma Programme (DP) and the Career-related Programme (CP). The content and objectives of each programme provide a meaningful transition from one programme to another. In the case of the IB MYP, it is important to look at the IB PYP education and if it affects the IB MYP Emergent and Capable level students' understanding of the inquiry-based learning.

As the majority of the participants have the IB PYP experience from the primary school (*f* =76,3), the students are assumed to be familiar with the IB philosophy. According to the research done by Drake, Savage, Reid, Bernard and Beres (2015), PYP focuses on three major themes; trandisciplinarity, collaborative engagement and learning journey (Drake, Savage, Reid, Bernard, & Beres, 2015).

Table 26. The Frequency of the IB PYP Experience

PYP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	119	76,3	76,8	76,8
	No	36	23,1	23,2	100,0
	Total	155	99,4	100,0	
Missing	System	1	,6		
Total		156	100,0		

Having the experience of the IB PYP education has positive effect on the IB MYP students' attitude toward research-inquiry based learning ($p < 0.05$). This positive effect is seen speficially on avoiding factor which focuses on students' perception of the use of research and how the students value the place of researching in their lives.

Table 27. Results of Levene's Test of Equality

Levene's Test for Equality of Variances

	F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*
Curiosity	2,054	,154	1,418	153	,158
			1,300	51,272	,199
Avoiding	5,798	,017	2,297	150	,023
			1,999	48,427	,051
Significance	,408	,524	,657	153	,512
			,650	56,809	,518

Building meaningful interconnections between disciplines is necessary to provide learners with a unique and purposeful learning experience. Although disciplines create frames for learners to make meaningful connections with the real life, it is crucial to integrate this knowledge with previous experiences. The IB programmes reach this aim by applying transdisciplinarity in the IB PYP and interdisciplinarity in the IB MYP. Table 27 below highlights the difference between these approaches (IBO, Interdisciplinary teaching and learning in the MYP Teacher Support Material, 2021).

Table 28. The Approaches to Connected Curriculum

Term	Definition	Examples	Visual Representation
Transdisciplinary	Working across and beyond disciplines, eliminating boundaries Transcends the confines of disciplines to explore an issue using a shared approach for inquiry	Hospital patient well-being team A IB PYP unit of inquiry into the theme "Who we are" principled action in response to climate change (geography and design)	Transdisciplinary theme
Interdisciplinary	Working between more than one discipline, blurring boundaries Interaction among disciplines to achieve new, integrated understanding	Informatics (social sciences and information technology)	Integrated understanding

To support the quantitative finding from the Independent Samples T- Test, the questions on the topic of the IB PYP experience and transition to the IB MYP programme were directed to the participants in the semi-structured interviews. These interviews revealed that the students with the IB PYP experience can understand the terminology, concepts and how the IB philoshopy, mission and vision is achieved by following a well planned curriculum which enables vertical connections among different levels. The components of the IB PYP and the IB MYP curriculum has a smooth transition from transdisciplinarity to interdisciplinarity which can help students make easier connections among different disciplines and life itself. On the other hand, the students also stated how they observed and interpreted the increasing complexity of the curriculum between the emergent and the IB MYP capable levels.

3.3.1 Problem- Solving and Thinking Skills in the IB MYP

Bloom's taxonomy was created to facilitate communication and thinking with six different objectives knowledge, comprehension, application, analysis, synthesis, and evaluation. These six educational objectives pave a way for higher order thinking skills and encouraging learners to achieve more than rote memorization and limited understanding of a topic (Bloom, Engelhart, Furst, Hill, & Kratwohl, 1956). Each programme of the IB bases its curriculum on Bloom's taxonomy with different approaches and terminology. In the IB MYP, these educational objectives are achieved by the integration of ATL skills in the curriculum. Especially the social and thinking skills can be highly connected to the aim of equiping students with the necessary problem-solving and thinking skills.

Although thinking is considered as an individual activity, it is fostered by social interactions and collaboration that are supported by school communities. According to the research conducted by Swartz and McGuinness (2014), group work or pair work enables learners to scaffold one another's thinking process and leads to creating new solutions. This shared experience of thinking is the object of metacognitive reflection (Swartz & McGuinness, 2014). It is important to teach thinking skills in various ways rather than pushing learners into the process of deep thinking for open-ended questions.

There are some key principles that are put forward by Swartz and McGuinness (2014) to emphasize the importance of teaching thinking (Swartz & McGuinness, 2014). Some of these principles are;

- *teaching explicit thinking organizers/strategies in the classroom*
- *advancing deep thinking challenges using engaging questions as a form of prompting rather than didactic instruction*
- *engaging students in collaborative thinking to ensure joint meaning making, interaction and dialogue*
- *prompting students to adopt a strong metacognitive perspective*

In the semi-structured interviews held with the students, the participants answers show some differences. While the students of Grade 5 and Grade 6 focus on how learning

English enables solving their problems and determine conditions where they can easily communicate with people from other nations, Grade 7 and Grade 8 students focus on ATL skills explicitly in real life and how using these skills can make them more capable of doing things in real life and be more sophisticated specifically in relation to the content of English classes. Some examples of the participants' replies in the semi-structured interviews are shared below.

Table 29. Semi-Structured Students' Interview Notes

IB MYP Phase	Grade Level	
MYP Emergent Level	Intensive Grade 5	" It is easier to solve problems and we use English more to learn new things."
	Grade 5	" I think about the problem first, I try to find examples from daily life to create solutions."
	Grade 6	" I used English to communicate with others when I was abroad."
MYP Capable Level	Grade 7	" English materials can help us learn about real life. For example; Gangsta Granny has information about London and also we can improve the language skills."
		"We use ATL skills in real life."
	Grade 8	"The content of materials can make us more sophisticated and aware of the world around us."

In addition, the semi-structured interviews are held with English, Science and Maths teachers to support the data gathered from the student interviews. The teachers highlighted the importance of ATL skills and how it is the teachers' duty to help students

gain these skills. As each unit plan shapes around specific ATL skills teaching explicitly or implicitly, there should be some approaches to provide necessary assessment. The formative, summative assessments tools and projects are used to measure the ATL skills and how well they are achieved. Especially in maths and science classes, project based learning strategies are adapted to promote a sequence of thinking skills in relation to the lesson content. Therefore, the criteria of each assessment is created meticulously to link the characteristics of thinking and thinking-related objectives of the unit. The teachers also mentioned their belief in how employing these skills becomes a habit in real life such as using time effectively, plan or use strategies to achieve goals and taking responsibility of the learning process.

CHAPTER 4 DISCUSSION AND CONCLUSION

In this part of the study, the research is summarized by considering the research's objectives, method and findings. The decision is made according to the research findings and some suggestions are given to navigate further research related to the research topic.

4.1 Summary

The nature of education has changed and shown great development since the First Industrial Revolution took place in the 18th-century. Since then, each Industrial Revolution brought new trends to social, economical and educational standards and applications. While preserving the values and norms of the societies, the educational standards have opened up enough space for change to progress and catch the needs of the centuries. To provide students with necessary tools to make sense of the cultural, natural and social environment has been one of the key decisions to improve the quality of the learning experience and turn it into a life-long learning process. The insufficient disciplinary set of knowledge has turned to interdisciplinary learning processes where the 21st-century skills such as interpersonal, intrapersonal, metacognitive skills and thinking, problem-solving strategies are in the center for improvement. The goal of preparing students for the diverse jobs in the 21st-century has also changed the educational programmes and policies. The investment on material has left its place to the investment in human and soft skills. Compared to the previous centuries, the pace of development is higher in the 21st-century. With the raising number of the IB schools around the world, the International Baccalaureate has always paid ultimate attention to prepare learners for making the world a better place. To achieve this, a well-planned interdisciplinary curriculum which enables learners to combine the disciplinary knowledge on language, arts, science and maths is fundamental. A meaningful interdisciplinary curriculum is the pillar of the IB MYP. Therefore, the content of the programme depends on a well-constructed transdisciplinary learning experience in the IB PYP and well-designed unit plans to support the understanding of subject specific concepts for a high quality interdisciplinary learning and teaching experience. The content of the projects and curricula in the IB MYP prepare students for the needs of the 21st-century and reduce their dependency on the discipline based content learning by developing learners'

metacognition. Moreover, the application of the holistic approach can create beneficial impact on students' perspectives and make language acquisition more meaningful.

The aim of this reseach was to investigate the attitude of the IB MYP students towards interdisciplinary and inquiry-based learning; therefore understanding its effect on English class at the selected IB continuum school in Turkey. In addition to this, the English, maths and science teachers' understanding of the interdisciplinary teaching and collaboration and their experience in inquiry-based teaching were also explored. The design of the study is a comparative case study in which two lB MYP levels; Emergent and Capable were investigated.

The research was held in the academic year of 2020-2021 at the selected IB continuum school in Istanbul, Turkey. The research participants were the 194 IB MYP Emergent and Capable level students (Grade 5, 6, 7, and 8) , 4 English teachers, 2 maths and 2 science subject area teachers. The research was conducted by using qualitative and quantitative data collecting methods such as semi-structured interviews, application of five-point likert scales, and content analysis. To understand the students attitude towards inquiry-based learning, ASYTÖ (The Attitude Scale towards Research- Inquiry for Secondary School Students) with thirteen items and three factors; "Curiosity", "Avoiding",and "Signification" was applied. In addition to the ASYTÖ scale, The Attitude Scale for Elementary English Course with twenty-seven questions and five factors; ; (i) sensitivity, (ii) consciousness, (iii) importance, (iv) methods and materials and (v) language and culture was used to comprehend the students' attitude toward English classes. To support the findings from these two scales, semi-structured interviews were held separately with each Grade level and English, maths and science subject-area teachers.

According to the research findings, it has been found out that the students of IB MYP has positive attitude towards inquiry-based learning and English classes by achieving high score in the applied scales. Although the students enjoy learning English, they are not very sure about the importance of it in their lives. The students of IB MYP are aware of the importance of interdisciplinary learning that it makes a difference in their learning experience. The use of IDU activities reinforces the learning process and make meaningful connections between different subject groups to see the bigger picture.

Moreover, the inquiry based learning helps students to build deeper understanding in interdisciplinary learning. Having the foundation on the curriculum of IB PYP, the IB MYP students benefit from a smooth transition from transdisciplinarity to interdisciplinarity. The data collected for the research shows that having IB PYP education effects the IB MYP students' attitude towards inquiry-based learning positively. In other words, the students with the IB PYP experience show a greater tendency to appreciate research in their lives. Thinking is not an isolated activity and it should be supported by social interactions and collaboration. The IDU activities and group work offer great opportunities to foster one's thinking and problem-solving skills. Particularly, the experience of thinking should be a shared experience of learners. The use of ATL skills supports different types of 21st-century skills from which each individual must benefit.

4.2 Conclusion

The change in the educational trends and standards since the First Industrial Revolution has led to different understanding and application of education around the world. The disciplinary learning experience in mass groups has left its place to smaller groups where each individual can have a chance to work collaboratively to reinforce the knowledge of different disciplines to create a melting pot of interdisciplinary knowledge. The importance of interdisciplinary education has started to play a great role since the future work place's demands are no longer on the disciplinary knowledge workers, instead of people who can perform necessary soft skills to show their capacity. The 21st-century's work place requires each individual to combine the knowledge from different areas to create unique solutions to problems and show the difference of human capital to the AI. Contrary to the previous centuries, education is no longer a reason to get a good job, but rather a prerequisite to exist in the new world. The new normal of education has its own demands and expectations from each individual to perform and reveal their true potential.

The IB programme provides a unique learning opportunity for its learners to make the world a better place. The four programmes (the IB PYP, the IB MYP, the IB DP and the IB CP) of the IB aim to equip learners with necessary 21st-century skills and

knowledge. The boundaries of disciplinary learning is not applicable in the IB education and learners are encouraged to use the knowledge from different subject groups to build interdisciplinary understanding and problem-solving. In the selected IB continuum school, the use of IDU plans and well-established collaboration among the subject groups of English, maths and science play a crucial role to support the interdisciplinary learning and the development of the 21st-century skills. The interdisciplinary collaboration is encouraged among both students and teachers to develop the quality of the learning experience. The interdisciplinary learning also contributes to the language learning experience of the students and helps them make sense of the language by making connections to the real world. The IB MYP students can grasp the motive of learning a foreign language and how they can benefit from it to solve their daily life problems.

As the interdisciplinary learning can not be solely build on limited set of disciplinary knowledge, the assessment procedure must be designed accordingly to meet the needs. Unfortunately, the use of standardized tests and single answer questions may lack the necessary qualities to grant an objective and effective way of assessing. In the IB MYP, the use of formative, summative assessments designed on the content of the interdisciplinary objectives and the students' achievement levels in the group projects and performance tasks provide crucial data to understand each learner's learning process. A student who can benefit from the interdisciplinary learning experience is enriched by the experience of making connections to the real world and appreciation of inquiry based learning. Moreover, the IB MYP supports the development of five categories of ATL skills; thinking, communication, self-management, research and social skills to make education more meaningful and efficient for the needs of the 21st-century and the tomorrow's world. Besides these soft skills, the approach of teaching based on inquiry with conceptual understanding with collaboration and developing students' perception of the local and global contexts with a degree of differentiation is fundamental to meet the needs of the IB MYP educational standards. Also, the IB MYP students develop the ATL skills by referring to the active use of IB learning attributes.

The IB MYP is based on three levels which are designed accordingly to the needs of each phase and grade level. The scope of the research was built on the perceptions of emergent (Grade 5 and 6) and capable (Grade 7 and Grade 8) IB MYP level students at

the selected IB continuum school. The research shows that the students of these two levels show some differences in terms of the foreign language proficiency and the level of making connections to the real world. The students in the IB MYP capable level proves to be more proficient in using English to solve problems and improve the understanding of the disciplines of science and maths, while the students in the IB MYP emergent level cannot build meaningful connection to the real world and the benefits of learning English and using inquiry-based learning approach as efficient as the IB MYP capable level students at the selected IB continuum school.

Although, the IB MYP students at the selected IB continuum school experience a good level of interdisciplinarity, meaningful content and inquiry-based learning, the integration of various activities which can support global competence as mentioned by OECD previously and ATL skills will be crucial for the further development of the IB MYP curriculum. Also, a more reinforced curriculum with more interdisciplinary collaboration and unique interdisciplinary learning opportunities for students to build real life connections will be more meaningful and beneficial to apply especially in English classes.

4.3 Implications and Suggestions for Further Research

The research which focuses on the effects of interdisciplinary collaboration on English class is carried out with the IB MYP students (Grade 5,6,7 and 8) and two maths, two science and two English IB MYP teachers at the selected IB continuum school in Istanbul, Turkey. The future research related to the research area and topic can be shaped according to the suggestions given below:

- A comparative case study of the the three IB MYP level (emergent, capable and proficient) students' perception of inquiry based learning can be investigated. To do so, the Grade 9 and 10 levels need to be involved in the research process.
- A research on interdisciplinary understanding of the students in the IB MYP students and non-IB middle school students can be made.
- The transition from transdisciplinarity to interdisciplinarity between the Grade 4 and Grade 5 levels can be investigated.

- The relation between the level of language proficiency and interdisciplinary learning in the IB MYP can be investigated.
- The effect of IDU activities on English and inquiry-based learning in the IB MYP can be investigated.
- The effect of interdisciplinary learning experience on the IB MYP Personal Project in the IB MYP proficient level can be researched.
- The effect of inquiry-based learning experience on the IB MYP Personal Project in the IB MYP proficient level can be researched.
- The understanding of the IB MYP English, arts, sciences and mathematics teachers on the interdisciplinary collaboration and teaching can be further researched.
- A case study on the application of the IB MYP interdisciplinary unit in the non-IB middle school can be held to understand its contributions on the non-IB middle school students.
- The effects of interdisciplinary learning transition from the IB PYP to the IB MYP can be investigated in the context of IB continuum and non-IB continuum school.

APPENDICES

APPENDIX A- ATL SKILLS CHART

Communication	
I. Communication skills	
How can students communicate through interaction?	**Exchanging thoughts, messages and information effectively through interaction** • Give and receive meaningful feedback • Use intercultural understanding to interpret communication • Use a variety of speaking techniques to communicate with a variety of audiences • Use appropriate forms of writing for different purposes and audiences • Use a variety of media to communicate with a range of audiences • Interpret and use effectively modes of non-verbal communication • Negotiate ideas and knowledge with peers and teachers • Participate in, and contribute to, digital social media networks • Collaborate with peers and experts using a variety of digital environments and media • Share ideas with multiple audiences using a variety of digital environments and media
How can students demonstrate communication through language?	**Reading, writing and using language to gather and communicate information** • Read critically and for comprehension • Read a variety of sources for information and for pleasure • Make inferences and draw conclusions • Use and interpret a range of discipline-specific terms and symbols • Write for different purposes • Understand and use mathematical notation • Paraphrase accurately and concisely • Preview and skim texts to build understanding • Take effective notes in class • Make effective summary notes for studying • Use a variety of organizers for academic writing tasks • Find information for disciplinary and interdisciplinary inquiries, using a variety of media • Organize and depict information logically • Structure information in summaries, essays and reports

Figure.A.1

Social	
II. Collaboration skills	
How can students collaborate?	**Working effectively with others** • Use social media networks appropriately to build and develop relationships • Practise empathy • Delegate and share responsibility for decision-making • Help others to succeed • Take responsibility for one's own actions • Manage and resolve conflict, and work collaboratively in teams • Build consensus • Make fair and equitable decisions • Listen actively to other perspectives and ideas • Negotiate effectively • Encourage others to contribute • Exercise leadership and take on a variety of roles within groups • Give and receive meaningful feedback • Advocate for one's own rights and needs
Self-management	
III. Organization skills	
How can students demonstrate organization skills?	**Managing time and tasks effectively** • Plan short- and long-term assignments; meet deadlines • Create plans to prepare for summative assessments (examinations and performances) • Keep and use a weekly planner for assignments • Set goals that are challenging and realistic • Plan strategies and take action to achieve personal and academic goals • Bring necessary equipment and supplies to class • Keep an organized and logical system of information files/notebooks • Use appropriate strategies for organizing complex information • Understand and use sensory learning preferences (learning styles) • Select and use technology effectively and productively

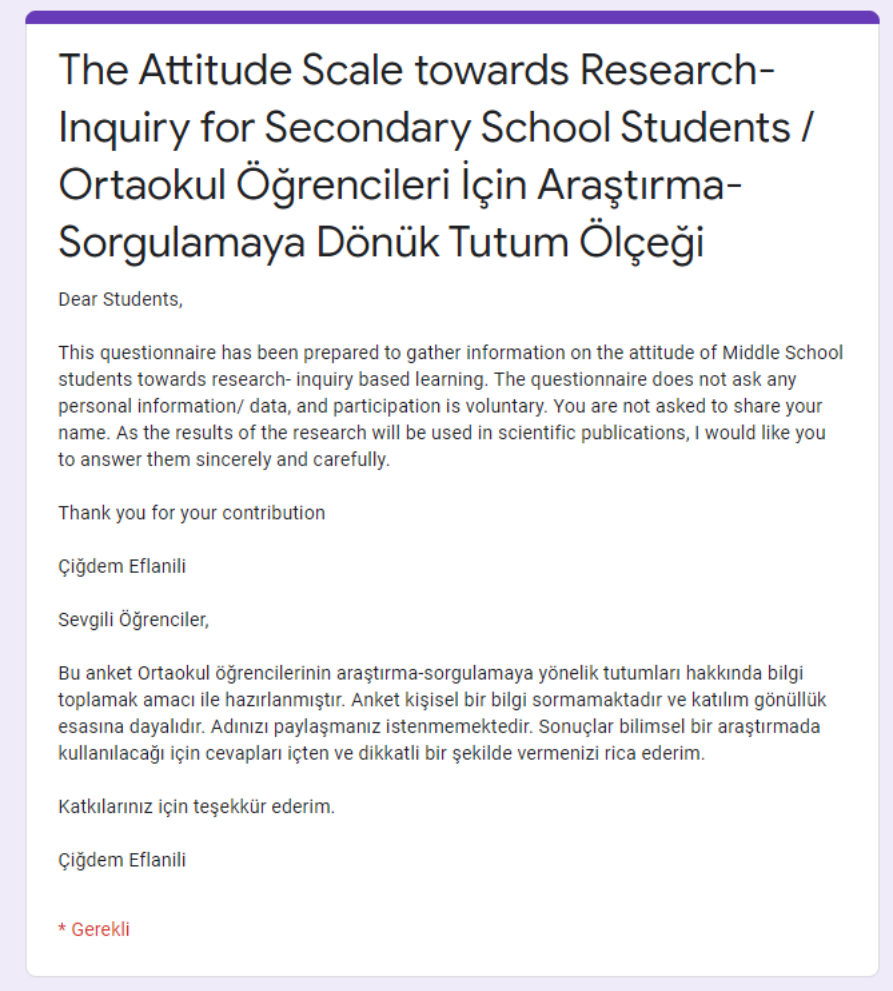
Figure.A.2

IV. Affective skills	
How can students manage their own state of mind?	**Managing state of mind** • Mindfulness – Practise focus and concentration – Practise strategies to develop mental focus – Practise strategies to overcome distractions – Practise being aware of body–mind connections • Perseverance – Demonstrate persistence and perseverance – Practise delaying gratification • Emotional management – Practise strategies to overcome impulsiveness and anger – Practise strategies to prevent and eliminate bullying – Practise strategies to reduce stress and anxiety • Self-motivation – Practise analysing and attributing causes for failure – Practise managing self-talk – Practise positive thinking • Resilience – Practise "bouncing back" after adversity, mistakes and failures – Practise "failing well" – Practise dealing with disappointment and unmet expectations – Practise dealing with change

APPENDIX B- THE PERMISSION FOR THE SCALES USED

Bu belge, Yükseköğretim Kurulu tarafından 19.01.2021 tarihli "*Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına İlişkin Yönerge*" ile bildirilen 6689 Sayılı Kişisel Verilerin Korunması Kanunu kapsamında gizlenmiştir.

APPENDIX C- THE THE ATTITUDE SCALE TOWARDS RESEARCH- INQUIRY FOR SECONDARY SCHOOL STUDENTS SCALE (ASYTÖ)



The Attitude Scale towards Research-Inquiry for Secondary School Students / Ortaokul Öğrencileri İçin Araştırma-Sorgulamaya Dönük Tutum Ölçeği

Dear Students,

This questionnaire has been prepared to gather information on the attitude of Middle School students towards research- inquiry based learning. The questionnaire does not ask any personal information/ data, and participation is voluntary. You are not asked to share your name. As the results of the research will be used in scientific publications, I would like you to answer them sincerely and carefully.

Thank you for your contribution

Çiğdem Eflanili

Sevgili Öğrenciler,

Bu anket Ortaokul öğrencilerinin araştırma-sorgulamaya yönelik tutumları hakkında bilgi toplamak amacı ile hazırlanmıştır. Anket kişisel bir bilgi sormamaktadır ve katılım gönüllük esasına dayalıdır. Adınızı paylaşmanız istenmemektedir. Sonuçlar bilimsel bir araştırmada kullanılacağı için cevapları içten ve dikkatli bir şekilde vermenizi rica ederim.

Katkılarınız için teşekkür ederim.

Çiğdem Eflanili

* Gerekli

Please give the most suitable answer to the statements below. / Lütfen aşağıda verilen ifadelere sizin için en uygun cevabı veriniz.

The options are stated as Strongly Disagree (1), Disagree (2), Not sure (3), Agree (4), Strongly Agree (5). / Seçenekler Kesinlikle Katılmıyorum (1), Katılmıyorum (2), Kararsızım (3), Katılıyorum (4), Kesinlikle Katılıyorum (5) olarak belirtilmiştir.

1- I would like to find answers to the questions that I have on the topic./ Kafama takılan sorulara cevap bulmayı isterim.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

2- I don't hesitate to ask questions on the topic discussed./ Tartışılan bir konu hakkında bilmediklerimi çekinmeden sorarım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

3- I like to research things which can make our lives easier./ Hayatımızı kolaylaştıracak araştırmalar yapmayı isterim.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

4- Whenever I read something, I question if it is true or not./ Herhangi bir şey okurken okuduklarımın doğru olup olmadığını düşünürüm.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

5- Researching is a waste of time. / Araştırma yapmak bazen zaman kaybıdır.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

6- I am not interested in researching./ Araştırmalar ilgi alanıma girmez.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

7- The research which cannot be finalized quickly is not necessary. / Çabuk sonuçlandırılmayan araştırmalar gereksiz araştırmalardır.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

8- I feel bad when there is a research assignment./ Bir araştırma ödevi verildiğinde kendimi kötü hissederim.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

9- I find it ridiculous to research in teams./ Arkadaşlarımla bir grup kurarak araştırma yapmak bana saçma geliyor.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

10- Research helps us control our lives. / Araştırmalar hayatımızı kontrol etmemizi sağlar.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

11- I don't believe life is full of research. / Hayatın araştırmalarla dolu olduğuna inanmam.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

12- I don't think research needs attention. / Araştırmaların dikkat gerektirdiğini düşünmem.

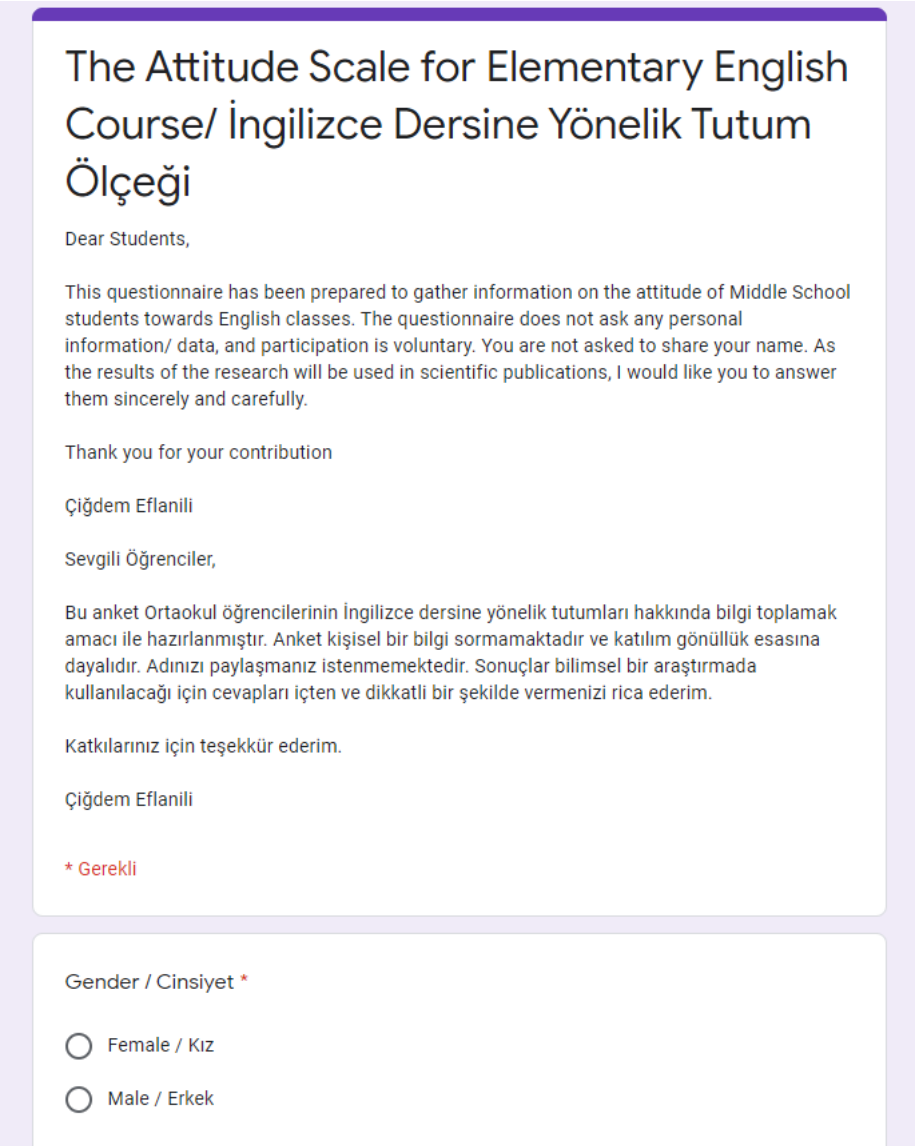
	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

13- I believe that research is an important part of our lives. / Araştırmanın hayatımızda önemli bir parça olduğuna inanırım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

Geri Gönder

APPENDIX D- THE ATTITUDE SCALE FOR ELEMENTARY ENGLISH COURSE



The Attitude Scale for Elementary English Course/ İngilizce Dersine Yönelik Tutum Ölçeği

Dear Students,

This questionnaire has been prepared to gather information on the attitude of Middle School students towards English classes. The questionnaire does not ask any personal information/ data, and participation is voluntary. You are not asked to share your name. As the results of the research will be used in scientific publications, I would like you to answer them sincerely and carefully.

Thank you for your contribution

Çiğdem Eflanili

Sevgili Öğrenciler,

Bu anket Ortaokul öğrencilerinin İngilizce dersine yönelik tutumları hakkında bilgi toplamak amacı ile hazırlanmıştır. Anket kişisel bir bilgi sormamaktadır ve katılım gönüllük esasına dayalıdır. Adınızı paylaşmanız istenmemektedir. Sonuçlar bilimsel bir araştırmada kullanılacağı için cevapları içten ve dikkatli bir şekilde vermenizi rica ederim.

Katkılarınız için teşekkür ederim.

Çiğdem Eflanili

* Gerekli

Gender / Cinsiyet *

- ◯ Female / Kız
- ◯ Male / Erkek

Age / Yaş *

- 9-11
- 11-13
- 13-15

Level / Seviye *

- 5
- 6
- 7
- 8

How many years have you been learning English? / Kaç yıldır İngilizce öğreniyorsunuz? *

- 0-2
- 2-4
- 4-6
- 6+

Were you a student of the PYP? / PYP programında öğrenci miydiniz? *

- Yes / Evet
- No / Hayır

How many years have you been a student of the IB? / Kaç yıldır IB programında öğrencisiniz? *

- 0-2
- 2-4
- 4-6
- 6+

Sonraki

The Attitude Scale for Elementary English Course/ İngilizce Dersine Yönelik Tutum Ölçeği

Please give the most suitable answer to the statements below. / Lütfen aşağıda verilen ifadelere sizin için en uygun cevabı veriniz.

The options are stated as Strongly Disagree (1), Disagree (2), Not sure (3), Agree (4), Strongly Agree (5). / Seçenekler Kesinlikle Katılmıyorum (1), Katılmıyorum (2), Kararsızım (3), Katılıyorum (4), Kesinlikle Katılıyorum (5) olarak belirtilmiştir.

1- English is one of my favorite subjects. / İngilizce en çok sevdiğim dersler arasındadır.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

2- It is hard for me to understand and use English Grammar. / İngilizce dilbilgisini anlamak ve kullanmak bana zor geliyor.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

3- It is fun to engage in English. /İngilizce dersi ile uğraşmak beni eğlendirir.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

4- It is boring to study English. / İngilizce dersine çalışırken canım sıkılır.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

5- Learning English is not important for my future. / İngilizceden ilerlemek geleceğim için önemli değildir.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

6- I am scared of English class. / İngilizce dersinden korkarım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

7- I like using and speaking English. / İngilizce konuşmaktan ve onu kullanmaktan hoşlanıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

8- I believe that English is a common language around the world which helps people communicate. / İngilizcenin, dünyada herkesin anlaşmasını sağlayan ortak bir dil olduğuna inanıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

9- I am interested in everything related to English. / İngilizce ile ilgili her şey ilgimi çeker.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

10- If I had a chance, I would take English classes out of the curriculum. / Yetki verseler okuldaki tüm İngilizce derslerini kaldırırım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

11- I believe that English will be useful for my future career. / İngilizcenin gelecekte yapacağım meslekte işime yarayacağına inanıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

12- If it is possible, I would take another subject instead of English. / Mümkün olsa, İngilizce dersi yerine başka bir ders alırım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

13- I find it enjoyable doing English homework. / İngilizce dersi ödevlerini sıkılmadan zevkle yaparım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

14- English is one of the most important subjects./ İngilizce dersi, derslerin en önemlilerinden bir tanesidir.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

15- It is fun to speak, roleplay, listen to music and play games in English classes. / İngilizce dersinde konuşmak, drama yapmak, müzik dinlemek ve oyun oynamak bana zevk verir.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

16- I like English most among all the other subjects. / Dersler arasında en çok İngilizce dersinden hoşlanırım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

17- I like dealing with the topics of my English class in my free time. / Boş zamanlarımda İngilizce dersi konuları ile uğraşmaktan hoşlanırım.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

18- I don't believe it is useful to spend time learning English. / İngilizce ile uğraşmanın pek yararlı bir iş olduğuna inanmıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

19- I like the in-class activities done in English classes. / İngilizce dersinde yapılan etkinlikleri ve sınıf-içi faaliyetleri severim.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

20- I don't like talking about foreign people and other cultures in English classes. / İngilizce dersinde yabancı insanlar ve kültürler hakkında konuşmaktan hoşlanmam.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

21- I want to be an English teacher when I grow up. / Büyüyünce İngilizce öğretmeni olmak istiyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

22- I think it is a waste of time to learn English. / İngilizce ile uğraşmanın zaman kaybı olduğunu düşünüyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

23- I find books, pictures and materials related to English interesting. / İngilizce ile ilgili kitaplar, resim ve materyaller ilgimi çeker.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

24- I don't feel like going to school when there is an English class. / İngilizce dersinin olduğu gün okula gitmek içimden gelmiyor.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

25- I think English is an unnecessary subject. / İngilizcenin gereksiz bir ders olduğuna inanıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

26- I don't believe that I will use English in my whole life./ İngilizceyi hayatım boyunca hiçbir yerde kullanacağıma inanmıyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

27- I like the materials and resources used in English classes. / İngilizce dersinde kullandığımız kaynak ve materyalleri seviyorum.

	1	2	3	4	5	
Strongly Disagree / Kesinlikle Katılmıyorum	○	○	○	○	○	Strongly Agree / Kesinlikle Katılıyorum

Geri Gönder

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