HOW HEADS OF SCIENCE DEPARTMENTS WITHIN INTERNATIONAL BACCALAUREATE DIPLOMA SCHOOLS SHOW THEIR INSTRUCTIONAL LEADERSHIP ROLE

A MASTER'S THESIS

BY

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THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BİLKENT UNIVERSITY
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To my beloved mother, father and wife

HOW HEADS OF SCIENCE DEPARTMENTS WITHIN INTERNATIONAL BACCALAUREATE DIPLOMA SCHOOLS SHOW THEIR INSTRUCTIONAL LEADERSHIP ROLE

The Graduate School of Education

of

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I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

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ABSTRACT

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M.A., Program of Curriculum and Instruction

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April 2015

Heads of science departments in International Baccalaureate Diploma Programme schools in Ankara were interviewed in order to analyse their instructional leadership role with regard to developing and implementing the curriculum, supervision of the curriculum; and to analyse obstacles during curriculum implementation. The participants of this study are nine heads of science departments who work at International Baccalaureate schools in Ankara. An interview guide prepared by the researcher was utilized to analyse the instructional leadership role of the heads of science departments.

The data gathered by voice recording and note taking was transcribed and analysed by content analysis method. The study found that heads of science departments in IB DP schools understood their instructional leadership role and seemed to perform it well.

Key words: Instructional leadership, Teachers' leadership, Heads of departments' instructional leadership

ÖZET

ULUSLARARASI BAKALORYA OKULLARINDAKİ FEN BİLİMLERİ BÖLÜM BAŞKANLARI BÖLÜMLERİNDE ÖĞRETİMSEL LİDERLİK ROLLERİNİ NASIL SERGİLEMEKTEDİRLER

İsmail Çağrı Dağlı

Yüksek Lisans, Eğitim Programları ve Öğretim

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Bu çalışmada Ankara ili genelinde bulunan Uluslararası Bakalorya okullarında görev yapan fen bilimleri bölüm başkanlarının öğretimsel liderlik rollerini müfredatın geliştirilmesi, uygulanması, ve denetlenmesi kapsamında nasıl yerine getirdiklerini ve fen bilimleri müfredatını uygularken karşılaştıkları zorlukları analiz etmektir. Çalışmanın katılımcılarını Ankara il genelinde bulunan Uluslararası Bakalorya okullarında görev yapmakta olan dokuz fen bilimleri bölüm başkanı oluşturmaktadır. Araştırmada, fen bilimleri bölüm başkanlarının öğretimsel liderlik rollerini yerine getirme düzeylerini analiz etmek üzere araştırmacı tarafından geliştirilen açık uçlu sorular kullanılmıştır.

Araştırma süresince elde edilen veriler metne aktarılmış, içerik analizi yöntemi ile analiz edilmiştir. Araştırma sonucunda fen bilimleri bölüm başkanlarının öğretimsel liderlik özelliklerine sahip olduklarını ve öğretimsel liderliğin gerektirdiklerini başarılı bir şekilde yerine getirdikleri sonucuna varılmıştır.

Anahtar Kelimeler: Öğretimsel liderlik, Öğretmen liderliği, Zümre başkanlarının öğretimsel liderliği,

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CHAPTER 1: INTRODUCTION

Introduction

Leadership is a distinctive area which should be differentiated from management; Bursalıoğlu (1994) says that *management* uses and controls human resources and materials in an organisation to reach organisational goals. With regard to *leadership*, Şişman (1997) asserts that leadership is the process of having people carry out actions within an organisation. However, both leadership and management have been used to refer to the same concept, as indicated in Harris (2007).

The Turkish Ministry of National Education (MoNE) (2009) has clearly stated that education in Turkey has changed in terms of context, application, and management in recent years. In particular school leadership has emerged as an area of concern and development since school leadership affects students' learning quality by focusing on school targets, creating a school ethos which encourages teachers and students (Leithwood & Riehl, 2003). Thus, school leadership needs to be taken into consideration by educational leaders.

Among different types of school leadership, instructional leadership focuses on improving learning in school organizations (Lee et al., 2012). Instructional leadership changes the classical understanding of leadership roles of school staff. The focal point of instructional leadership is providing continuity of instruction, since each factor which may affect learning must be considered and designed for instruction and learning (Çelik, 2003).

Instructional leadership roles executed by the school administration should also be shown by heads of science departments and teachers. The research shows that good teachers who have a vision and direct students to success can be presented as effective instructional leaders (Harchar & Hyle, 1996).

This study is focused on the instructional leadership roles of head of departments throughout their departments.

Background

There are an increasing number of students who need to be well-educated, together with innovations in education such as instructional programs which are prepared according to current needs. Schools should, therefore, become equipped academically and with the necessary equipment. Schools increasing their capacity, and the increasing responsibilities of school teachers to learners, bring requirements to schools. One of these requirements is to have capable and well informed leaders. Thus leadership at all levels in school has become an important topic for discussion, analysis and action; and leadership is now a big issue in the educational world. "School organizations are inundated with different types of leadership styles as their different leaders are influenced by varied contexts" (Tsayang, 2011, p. 382).

Although many leadership styles which are specific for school administration are described in the related literature (Crawford, 2012; Aydın et al., 2013), only a few models have managed to become established. According to Hallinger (2003) one of the prominent leadership styles in education is instructional leadership. Instructional leadership is based on encouraging teachers' professional development in leadership attributes, and results in student development in learning, as well as development of the school's needs and goals. Hallinger also asserted that instructional leadership

strongly focuses on coordinating, controlling, supervising and developing curriculum and instruction. Instructional leadership also gives importance to collaborative work among school staff.

While there are numerous studies regarding the instructional leadership of school principals as the overall providers of instruction (Çalık et al., 2012); other studies such as Keedy (1999) stress also the role of teachers in the school. Keedy states that teachers should show instructional leadership behaviour as part of instructional development. Hallinger (2003) adds that teachers should have extended roles in administration as instructional leaders, seen in terms of managing instructional programs, creating a positive school climate and defining the school's mission.

In Turkey, instructional leadership is especially important since IBDP schools' science departments need to apply two curricula simultaneously (International Baccalaureate Diploma Programme and MoNE). IB is an international organisation that offers international educational programs for students. The Diploma Programme (IB DP) is designed and applied for senior high school students. The diploma curriculum aims to develop students with a holistic approach and puts students in the centre. There are six main subject groups in the program, science is one of them, which require performance-based assessment strategies and detailed lesson content. This study will focus on heads of science departments in some IBDP schools and their instructional leadership behaviour in their department.

Problem

Instructional leadership is a leadership style which helps administrators to develop objectives. It also promotes their collaborative skills and instructional processes to achieve the schools' goals (OECD, 2009). The term instructional leadership may be

applied to heads of science departments as well as all other department heads and to heads of schools.

In the Turkish context, heads of department have administrative responsibilities such as defining the school mission in terms of their departments, managing the instructional program, and creating a positive school climate as Hallinger (2003) indicated in his instructional leadership model.

Within this system, the perception of heads of department with regard to their instructional leadership role is important in terms of how their leadership style develops. It influences how they work within their departments to improve instructional methods, achieve common goals, promote professional development, and improve the instructional abilities of other teachers. In particular, science offers more challenges than other subjects because of the amount of practical work required. This is especially important in the International Baccalaureate (IB) diploma curriculum with its teacher-assessed practical work.

The problem therefore is how heads of science departments show their instructional leadership roles.

Purpose

The aim of this study is to analyse how heads of science departments in IB Diploma schools show their instructional leadership behaviour, and to present possible obstacles in the way of heads of science departments satisfactorily organising the curriculum.

Research questions

This study will address the following question:

How do heads of science departments within International Baccalaureate Diploma Schools show their instructional leadership behaviours within their departments?

Significance

With this study, a new generation of Turkish science teachers could adopt or improve their instructional leadership style in order to achieve their educational goals more effectively. For current heads of departments it could define their understanding of instructional leadership.

Teachers' instructional leadership roles such as executing the school's targets, organising the curriculum, and providing a healthy school ethos are important.

Instructional leadership styles which focus on improving students' academic level, the application of the curriculum and the teachers' personal instructional skills can assist in school improvement, making leaders for learning from heads of science departments (OECD, 2009).

Definition of terms

Instructional Leadership: The leadership style which encourages teachers to foster instruction and learning, focuses on managing, supervising and developing the curriculum, and encourages learning leading to academic achievement in the schools.

Instructional Leaders: Head of science departments who show instructional leadership roles in their departments.

Head of Science Department: Teachers who are appointed as head of department within the Ministry of National Education's rules and regulations by the school administration.

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

Instructional leadership has been researched from 1950s in the United States and elsewhere since researchers focused on how leaders foster student learning (Lipham, 1961; Gross & Herriot, 1965; Bridges, 1967; Shouppe & Pate 2010). There are numerous studies with regard to the features of powerful schools and the need for effective leadership in the school to organize the operation of the school (Shouppe & Pate, 2010). There are many studies over the past 30 years with regard to effective leadership styles in educational contexts. Among these studies, those relating to instructional leadership have been accepted as being significant and widespread in relation to contemporary schools (Hallinger, 2010).

As indicated in the results of the TALIS (Teaching and Learning International Survey by OECD (2009), instructional leadership is today's paradigm of leadership styles. It helps leaders to develop objectives and promote their collaborative working skills and instructional processes to achieve the school's goals with regard to teaching and learning. In particular, science subjects present more challenges than non-practical subjects, especially in the IB diploma curriculum with its teacher-assessed practical work. Therefore heads of science departments should be more planned, and should show their leadership roles more effectively, than others. This chapter will review some of the literature relating to leadership style, and then consider literature related to the perceptions, by heads of science departments in

International Baccalaureate Diploma Programme schools, of their instructional leadership roles.

Leadership

As Özkalp, and Kırel (2005) stated, when human beings live in groups, they need leaders who govern them and bring them to their relevant targets. Therefore they need leaders who manage the group and reach the target (Özkalp & Kırel, 2005). As Rauch & Behling (1984) asserted, leadership is a process of managing a group of people who are together for a specific purpose and affecting them in terms of reaching that purpose. Leadership therefore can direct and inspire human communities for different purposes. It is in the nature of people to need leaders for guidance to achieve different aims.

It should be noted that management is not the same as leadership. Like Bursalıoğlu (1994) quoted in Chapter 1, Naylor (2004) has also defined management as the process of achieving organizational aims for obtaining limited resources equally and effectively. Management is also defined as the process of achieving organizational goals with the contribution of the members of the organization and organizational resources (Certo, 2003).

Although leadership is a common research topic for social sciences such as psychology, sociology, politics, and management science, there is no common understanding of the definition of leadership. Leadership may be analysed and defined in different ways (Şişman, 2002; Eraslan, 2004). Definitions of leadership have been attempted by many researchers. A few are given below to indicate the range of understanding of the term.

Some define leadership as guiding members of a group to achieve the aims of the group. For example, Wright and Taylor (1984) indicated that leadership could be defined as an activity which influences the emotional and logical thoughts of community members within the aims and goals of the community.

Similarly, Rauch and Behling (1984, p.46) defined leadership as "the process of influencing the activities of an organized group toward goal achievement" and Bryman (1992, p. 21) as "a process of social influence whereby a leader steers members of a group towards a goal".

Others define leadership in terms of the group. Thus Jacobs and Jacques (1990, p. 281) state: "Leadership is a process of giving purpose (meaningful direction) to collective effort, and causing willing effort to be expanded to achieve purpose." Hosking (1988, p. 153) similarly states that "Leaders are those who consistently make effective contributions to social order, and who are expected and perceived to do so."

Still others define leadership in terms of the characteristics of the leader. For instance, Yukl (1994, p. 32) states "Leadership has been defined in terms of individual traits, behaviour, influence over other people, interaction patterns, role relationships, occupation of an administrative position by others regarding legitimacy of influence.", whereas Erdoğan (1991) considers the leader to be directing and controlling in order to coordinate the group.

Norris (1990) added creativity, intuitive thinking with analytical thinking skills in his definition of a leader, whereas Eren sees leadership as gathering a group of people around a target and having the ability to activate people for the target (Eren, 2006).

Goleman (1999) states that leadership is not to rule people, it is convincing people to work for a common purpose.

It seems, therefore, that different leadership definitions have been reached according to the time period, the context, and the situations where they arose. Recently, definitions give leadership as a concept which guides people rather than ruling them, and which varies depending on the situation rather than being just a definition. Different types of leadership are reviewed below as a list, under the heading models of leadership.

Models of leadership

With so many leadership definitions and descriptions, some researchers have created leadership models. Four of these are described below, chronologically. They are leadership forces (1984), frames of leadership (1997), elements of leadership (2002), and leadership styles (2003).

1. Leadership forces

In this model, Sergiovani (1984) defined several leadership types for excellence in leadership, consisting of the following:

Technical: This force focused on administration technically. Technical leaders are experts in planning and problem solving with regards to strategic faults.

Human: This force focused on the development of human power in the organization with the help of interpersonal communication skills.

Educational: Educational leaders converge the cumulative knowledge, and experience of the group and utilize it while managing the school with regards to curriculum and teaching.

Symbolic: These types of leaders focus on targets as symbols, and make those targets to be completed by their followers.

Cultural: Cultural leaders focus on well accepted school ethics. They aim to build common values and culture throughout the school.

2. Frames of leadership

The model put forward by Bolman and Deal (1997) is called four frames of leadership. This modelling includes structural, human resources, symbolic, and political leadership frames as summarized below.

Structural: In this leadership model leaders are supposed to act in order to:

- Centralize the common goals.
- Plan different strategies to simplify the way to reach the goals.
- Narrow down the limitations or disruptions.
- Promote professionalism to increase the level of work capacity.
- Practice team work and supervise efficacy.
- Mention to the structural problems to solve.

Human resources: This leadership model states that:

- Organizations endure to work for human needs,
- There is always a relationship with humans and institutions. There is a reciprocal benefit between organizations and people with regards to both benefit and damage.

Symbolic: This leadership model states:

- Ends are more important than the process.

- Humans infer different results from the same events.
- The majority of events are indefinite.
- Symbols are used to decrease uncertainty.

Political: This leadership model states:

- Institutions and companies consist of different types of people which work for the interest of the organization.
- Each person has different ethical values.
- Dominance causes uncertainty and disagreement between people.
- Decision making and targets depend on consensus between people.

3. Elements of leadership:

After Bolman and Deal's frames of leadership, Dimmock and Walker (2002) themselves listed leadership characteristics in a different way, and called them elements of leadership. According to their leadership model, a leader should have the following eight elements in his or her leadership style: team work, motivation, making a good strategy, determination, dialog, contention, review and rewarding, and professional development. These are the crucial points of being a leader. This model's approach to being a leader is simpler than the other leadership models. Dimmock and Walker conceptualized leadership by stating that a leader should carry these eight elements in order to be a good leader, rather than dividing leadership into different types.

4. Leadership styles:

One of the best and most recently accepted leadership models is that proposed by Leithwood, Jantzi, and Steinbach (1999) when they identified six major types of leadership. In 2003, Bush and Glover developed this modelling into nine major

leadership styles: Managerial, participative, transformational, transactional, post-modern, contingency, moral, interpersonal, instructional leadership styles. This is consolidated in their meta analyses of 121 papers (Bush, 2007).

Managerial leadership: Managerial leadership centralizes tasks, evaluations, and behaviours. The model suggests that if tasks are started accurately, then the work of the member of the organization is done competently. Many managerial leadership theories suppose that the community acts logically (Leithwood et al, 1999). Vision is not subsumed in this leadership model, however many leadership types are centralized. Managerial leadership takes into consideration the continuation of stability without any obstacle in the organization.

Participative leadership: Participative leaders encourage their followers to participate in the decision making process and planning about the organization. Participative leaders share their authority with their followers. They give importance to the ideas of their followers during the decision making process. Those followers who are respected with regards to thoughts and beliefs are motivated to contribute and their satisfaction increases (Eren, 2006)

Onaran (1975) also asserted that followers' ideas are always important for participative leaders, who always welcome other ideas.

Stoner and Freeman (1992) stated that participative leaders take into consideration the organization in which they work. They do not hesitate to discuss problems and decision with others and they seek participation in the decision making process. They consider relationships between people to be important, and are prepared for critical comment from others.

Güngör (1995) also said that participative leadership is the process in which followers can easily participate, working with the administration directly in decision making. One advantage of participative leadership is that followers participate in the planning, and policy making as well as the leaders. Another is that followers are affected positively since they think the leader gives importance to their wishes, work rate and morale also increase.

On the other hand as Eren (2006) stated, participative leadership style may cause time loss in the organization as everyone's views are gathered and discussed. Another disadvantage is that too many participants may act against the decision-making process, or may cause chaos among the organization.

Transformational leadership: Leitwood et al (1999) asserted that consensus and capability should be at the centre of the transformational leadership style. A greater level of consensus about organizational targets and higher levels of ability to achieve these targets ensure efficiency. Affecting people and control over followers are not required in this type of leadership in order to protect managerial positions.

Bass (1990) indicated that there are four basic factors of transformational leadership. They are:

- Charisma: This aspect of transformational leadership consist of showing a clear and trusted target for their followers, to support them morally to reach the decided target, to make followers feel that the leader is always supporting them, and giving positive energy to the followers. Leaders who have charisma evoke admiration on their followers.

- Intellectual incentive: In this aspect of transformational leadership, leaders strive to help their followers to deal with problems, guide their followers to find new points of view, and encourage to be innovative and creative. Leaders who provide intellectual incentives, give attractive challenges to their followers and want them to deal with the new ideas and innovations.
- Individual support: Leaders, who give individual support to their followers are friendly with their followers and give importance to their values and beliefs. Leaders also provide individual professional development and establish individual relationships with their followers. They are empathetic.
- Being influential: Leaders are role models for their followers. They should provide motivation to their followers in the organization and influence their work behaviour, enabling followers to show extra performance than normal.

Grant (2012) stated that there is a positive correlation between transformational leadership and the work capacity of the organization members when both sides have a common interest. Transformational leaders focus on thinking as a group rather than as an individual (Erdoğan, 2008).

Transactional leadership: In transactional leadership, situations are important for leaders. They encourage their followers with assurance, and provide verbal incentives. Members of the organization refine their acts via the leaders' criticism and their sanctions. Leaders show what should be done or how the process should operate without problems. Such leaders observe the organization and its participants

in order to guarantee that the work is effective. If there is something wrong they interfere and fix the problem with disciplinary sanctions (Bass & Steidlmeier, 1999).

In this approach of leadership, short term management, rules and regulations, one-way communication, concrete targets, the power of authority, and adaptation are the focus points of leaders. Such a system of leadership includes a punishment and reward system, and strong obedience to the rules and regulations in the organizations (Erdoğan, 2008).

Çelik (2007) asserted that features of transactional leadership are:

- Conditional rewarding: Rewarding needs high performance.
- Active management with exceptions: Exceptional faults are investigated by the leaders. The main aim is the excellence of the organizational operations.
- Passive management with exceptions: Passive management with exceptions includes non-interference with the criteria for the organization.
- Non-intervention: A non-intervention leadership does not accept any responsibility with regards to organization. They avoid making any decision as a leader.

Post-modern leadership: In this type of leadership, leaders should take into consideration the multiplicity of ideas in the organization, and leaders should give importance to the thoughts of each member who has the same authority as them (Bush, 2007)

Contingency leadership: “Contingent leadership focuses on how leaders respond to the unique organisational circumstances or problems they face.” (Bush & Glover, 2003, p: 22). Ayman et al. (1995) asserted that this model of leadership style includes two main leadership functions: leaders’ motivation and leaders’ control over situation.

Moral leadership: “This model assumes that the critical focus of leadership ought to be on the values, beliefs and ethics of leaders themselves” (Bush, 2007, p: 400)

Interpersonal leadership: “Interpersonal leadership focuses on the relationships leaders have with teachers, and others connected with the school.” (Bush & Glover, 2003, p: 21) Leaders needs to adjust team work throughout the group and be aware of ethical values.

Instructional leadership: Bush (2007) stated that this type of leadership was born with schools’ need of different leadership styles than other institutions as directing teaching and learning. Schools that function as communities incorporate values of their population by involving community members in schools (Schultz, 2010). They need specific leadership styles to reach their specific goals. Therefore instructional leadership is one of the leadership styles which have evolved for the different requirements of schools.

In conclusion, it can be said that all of the leadership styles forming the studies of many researchers are generally similar in nature. School changes and development have given different school contexts, and different roles within schools, causing the evolution of different types of leadership models. Based on a great deal of recent research of school leadership, the list has to fit the multiplicity of type of people who now become school leaders.

Recently, instructional leadership is the one which has emerged throughout that evolution period. It particularly relates to the nature of learning and teaching, and is highly specific to school leadership models.

Instructional Leadership

Instructional leadership is a leadership approach which includes instructional programs, the instructional process, and academic success. The most distinctive feature of instructional leadership, unlike other types of leadership styles, is its teaching and learning centred nature. Therefore, according to today's educational requirements, school leaders should focus on instructional leadership to accomplish regular tasks while they are empowering team-work and reaching a consensus between teachers. As Gümüşeli (1996) indicated, instructional leadership is unique to the field of education; it differs from other types of leadership in that it is related to students, teachers, curricula and the learning-teaching process. Early research showed that monitoring performance, rewarding good work, and providing staff development were generally accepted as instructional leadership behaviours (De Bevoise, 1984). Smith and Andrews (1989) also indicated that instructional leadership generally consists of a variety of tasks, such as controlling instruction in classrooms, teachers' self-improvement, and curriculum development. Instructional leadership, firstly, gives regard to the role of the leaders who organise, supervise, and improve the curriculum and teaching process in the school. Goals with regards to learning and teaching, and development of the students' academic achievements are the most important issues for them (Hallinger, 2003).

Sergiovanni (1984), who suggested one of the early instructional leadership models, asserted that an instructional leader must have five powers: technical, human, educational, symbolic and cultural. According to his model, the concept of technical

power covered traditional administrative skills such as planning, timing, leadership theory, and organizational improvements. The concept of human power was related to communicating with members of the school community, facilitation of schooling in terms of teaching and learning, and organizational development. Among these powers, the concepts of technical and human powers were generic for all school leaders, but the remaining three powers were decisive concepts for instructional leadership style. One of these, educational power, required expertise in learning, teaching and the curriculum. The last two powers, symbolic and cultural powers, were relevant to representing the school. As his model showed, instructional leaders should know about learning methods and skills, effective instruction and curriculum.

Furthermore a study conducted by OECD (2009) stated that school leadership should focus on the application of instructional leadership. The study presented five management behaviours which are relevant to instructional leadership. The result of that study showed that there emerged three main components of instructional leadership:

- Management of the school goals and curriculum conducted by teachers.
- Actions to be made to improve teachers' instructional abilities.
- Controlling teachers' instructional abilities and practices.

The study also presented six effects of instructional leadership style as listed below:

- More effective team work among teachers.
- Improved relationships between students and teachers.
- Better assessment results than other students by teacher appraisal and positive feedback.

- Higher ratios of participation in professional development meetings via prompting teachers in a positive way.
- More innovative instructional materials via teacher appraisals and positive feedback.
- Need of a plan for improving teacher appraisal by leaders.

Therefore, as the studies showed from 1950s, it can be obviously said that instructional leadership is one of the most important leadership styles to be improved by school leaders.

In Turkey, teachers have leadership responsibilities among their colleagues as heads of departments which was stated in MoNE's rules and regulations.

Teachers' instructional leadership

In fact, there are many teacher leaders who are stakeholders in their schools in Turkey. They are called heads of departments. According to MEB Regulations (1999), heads of departments have to be teachers, and being a head of department requires strong instructional leadership behaviour. MoNE mandates that a head of department has to be responsible for planning the curriculum and instruction in their department, monitoring and improving student success, collaborating to reach common goals in their department, taking steps to increase the quality of the education, providing professional development to their colleagues, providing equipment which is related to the department, providing support to students who have learning disabilities, and testing students' academic levels. These are the most known instructional leadership features, which are demonstrated in Hallinger's instructional leadership framework and are the inspirational point of this study.

Although there are many studies published about the instructional leadership behaviours of school principals, there is lack of studies about the instructional leadership behaviours of teachers. As team leaders, heads of departments are important to show instructional leadership behaviours in order to achieve the goals of their department. Of course there may be some questions in the mind of policy makers, such as how a teacher experiences instructional leadership when school directors or principals have been regarded as the stake holders by other school staff.

As Keedy (1999) stated, being a successful school depends on how to use essential human power which is one of the key elements of a school: teachers who are dedicated, smart, and competent. Therefore teacher leadership has been given importance in the relevant literature. Keedy also asserts that leadership has started to be redistributed in schools. In her research, she stated that teacher leadership for building a school had an international scope. For instance, Australia gave prizes to teachers to reward their leadership capability.

Keedy (1999) summarized her study under three main headings: fostering professionalism, redistributing authority, and increasing communication between other colleagues. Professionalism is the most important of these if a teacher is to behave as an instructional leader for teachers. However, many teachers identify their job as a moral activity which should be controlled by teachers, it is a profession and it requires powerful professionalism to be an important part of creating a purposeful school ethos. Secondly, to create teacher leaders, hierarchy should also be reduced and both teachers and administrators should start to relate to each other and authority be shared. Thirdly, increasing communication would decrease the isolation of teachers and empower collaboration. If requirements and improvements can be met, there is no reason for a teacher not to be a powerful instructional leader.

Framework model

This study makes use of Hallinger's instructional leadership model framework to analyse how the heads of science departments, as actual science teachers, show their instructional leadership roles.

According to Hallinger, there are three important functions of instructional leadership. They are defining the school mission, managing the instructional program, and promoting a positive school learning climate (Hallinger, 2005).

These three main functions have ten sub functions. The first main function, defining the school mission, includes developing distinct goals and objectives for schools and communicating them clearly.

The second main function, managing the instructional program, focuses on three responsibilities of an instructional leader: Controlling instruction, orchestrating the instructional program; and following student achievement.

The last main function, promoting a positive school learning climate, is about preserving instructional time in classrooms, fostering staff's self- improvement, high visibility, encouraging teachers to reach success, and encouraging students for learning. These 10 sub functions provide the framework in this research, as summarized below. The terminology used in this study is followed by Hallinger's (2003) terminology in parenthesis.

Curriculum management (Coordinating curriculum)

Instructional leaders should take a role to prepare a better school environment and organize the curriculum for student achievement (Gümüşeli, 1996). A good instructional leader knows and observes how the curriculum is conducted and makes

sure the curriculum is fulfilled (Schmoker, 2006). Hallinger & Murphy (1987) asserted that instructional leaders should provide improvement of the curriculum, better progress of the curriculum and supervision of the curriculum.

Framing departmental goals (Framing clear school goals)

Departments need clear goals (Zmuda et al., 2004). Creating effective goals provides the quality of teaching throughout schools (Harris, 2007). Leitwood and Riehl (2003) also asserted that a school's teachers should meet with the expectations of the school which is written in departmental goals. Hallinger (2009) stated that creating departmental goals which depends on explicitly understandable, standardized, and period-bound goals are essential for instructional leadership to achieve students' academic progress. The departmental goals can be created by administrators or department teachers. The important point is to have departmental goals which can be utilized in practice.

Notifying teachers (Communicating clear school goals)

Notifying all academic staff in the department is also the leader's responsibility Hallinger (2009). Collaboration and discussion about instructional strategies as a team is important (Blase & Blase, 1999). Instructional leaders need to organise and give the chance to work as a team to their teachers (Mendel et al, 2002). Also Miller et al. (2010) stated that all of the academic staff in a school should be involved in team work to bring forward the school. Instructional leaders need to have separate times for bureaucratic work, instruction, and policy making.

Monitoring students' academic level (Monitoring student progress)

Instructional leaders record student data and provide them to their teachers to improve instruction (Leitwood & Riehld, 2003). Continued success depends on recording data (Fullan, 2005). To record data, instructional leaders should also prepare balanced assessment strategies for their students. Marzano et al. (2005) asserted that curriculum, assessment, and instruction are important parameters of student learning.

Providing incentives for students (Providing incentives for learning)

There is a relationship between student achievement and leader behaviour (Hallinger 2003, 2005; Louis 2007; Leitwood & Mascall, 2008). Instructional leaders always try to enhance student learning without any excuses (Leitwood & Riehl, 2003). Accordingly, Hallinger and Murphy (1985) asserted that students should be appraised by assemblies, recording success in a student's portfolio and notifying school staff about students' success.

Maintaining high visibility

Instructional leaders should give effective feedback to teachers to improve their professional skills (Cooper et al., 2005). Accordingly, they need to have an open door policy, as well as a drop-in policy in their departments which provides them with frequent and meaningful classroom visits (NASSP, 2007).

Protecting instructional time

Instructional leaders need to use their time well. There is a strong need to utilize allocated time effectively at both daily and yearly levels, indicating good forward planning (McLeod et al., 2015).

Providing professional development (Promoting professional development)

Instructional leaders need to communicate effectively with their teachers, create opportunities for professional development for them, and motivate them for learning throughout their life (Blase & Blase, 1999). They should call teachers meetings to share their experiences from elsewhere about teaching and learning (Mendel et al., 2002) and, as Miller et al. (2010) indicated should distribute leadership tasks to facilitate professional development.

Providing incentives for teachers

The study done by OECD (2009) showed that positive feedback and praising teachers made them more fruitful in terms of designing instructional materials and developing new instructional strategies. Furthermore, giving appraisals made them more willing to participate in professional development seminars and develop themselves.

Supervision and evaluation of teachers (Supervising and evaluating instruction)

Instructional leaders need to have control both over teachers in their department and over the progress of the curriculum. Therefore instructional leaders, in this case heads of science departments, should be experts in their subject area. Hallinger (2003) asserted that teachers' subject area knowledge and experiences are important to develop school success.

As a conclusion, we can say that a school community, with a specific population and structure, has a need for a particular kind of leadership. School leadership has therefore been the focus of many studies, as indicated in this chapter.

Among numerous types of leadership in an educational context, instructional leadership has emerged as incorporating reality with theory. It provides a real and practical approach to actual leadership, at all levels from principal, through heads of departments, to teachers, within a school. It is centred on teaching and learning and provides a robust framework within which to discuss leadership in schools. The following chapters pursue Hallinger's model of instructional leadership in IB Diploma schools in Ankara.

CHAPTER 3: METHODOLOGY

Introduction

In this chapter, research design, context, participants, instrumentation, data collection, process and analyses of data will be covered. The research question to be answered concerns the instructional leadership behaviours of heads of science departments in IBDP schools, relating to the school's missions, managing the instructional program and creating a positive school climate. The study was conducted in International Baccalaureate Diploma Programme Schools in Ankara.

Research design

Content analysis method was used to address the research question. Content analysis is a method which is utilized to analyse participants' behaviours and attitudes. Interviews, field notes, books could be used as data for this method.

Stemler (2001) stated that content analysis history started with comparisons of texts. By the beginning of the 1940s the method began to be actively used in the social sciences. Although content analysis was seen as an impractical method to analyse large amount of texts or other resources, by the 1950s social scientists had begun to change the way of utilizing content analysis. They started to create themes rather than words to facilitate the analysis process. Berelson (1971) states that content analysis may be used in many types of research, for example:

- to analyse international differences in communication,
- to compare communication tools with their serviceability

- to supervise the content of communication tools,
- to examine psychological situation of individuals,
- to analyse cultural roots of any society.
- to identify attitudes and behaviours

Most relevance to this research is its use in identifying attitudes and behaviours.

Content analysis facilitates the ability to deal with large amounts of data. It is also utilized when focusing on personal or institutional tendencies (Weber, 1990).

In this research, content analysis was chosen to show the attitudes and behaviours of heads of science departments with regard to instructional leadership. It is used to analyse transcribed data and aims to get a deeper understanding of concepts, with regard to peoples' ideas, perceptions, and beliefs (Wilson, 2013).

In the first stage of the study, the related literature was researched. The history of educational leadership and its development were researched in relation to the different purposes and needs of the schools. After that, instructional leadership, which is one of the most effective leadership types for schooling, was examined to select a framework for the study. Among several instructional leadership behaviours, Hallinger's instructional leadership model was chosen as a framework to research the attitudes and behaviours of heads of science departments in IB DP schools in Ankara.

Hallinger's instructional leadership model focuses on ten instructional leadership behaviours under three main functions which are given in Table 1.

Table 1
Hallinger's instructional leadership frame

Categories	Sub categories
Defining the school mission	• Framing clear school goals • Communicating clear school goals
Managing instructional program	• Supervising and evaluating instruction • Coordinating curriculum • Monitoring student progress
Creating a positive school climate	• Protecting instructional time • Promoting professional development • Maintaining high visibility • Providing incentives for teachers • Providing incentives for learning

The theme titles were adjusted for this study to make clearer to heads of science departments (see Table 3). An interview guide was prepared to investigate the instructional leadership behaviour used by the heads of science departments during a school day.

The data were gathered using the prepared interview guide to interview nine heads of science departments in IBDP schools in Ankara. Interviews asking interviewees to give their opinions on instructional leadership behaviours were conducted face to face with the heads of departments. The interview guide was translated into Turkish in order to gather more accurate information from teachers who were native Turkish speakers. The data was recorded with a voice recorder and transcribed into a text. The texts were analysed and entries were coded and categorized, prepared according to Hallinger's instructional leadership behaviours. Themes and tables were created to demonstrate whether a head of science department showed an instructional leadership behaviour or they did not.

Context

The study was conducted in four private IBDP schools and a university in Ankara Turkey.

Participants

Participants were found from IBDP schools in Ankara. At the beginning of the study, a permission was taken from Ministry of National Education, then relevant schools were contacted. Appointments were arranged with the four respondent school administrations and heads of science departments. From these four schools, nine heads of science departments from physics, chemistry, biology, and mathematics departments in the schools studied. Participants were selected because they were leaders of departments and behaved as an instructional leaders. Participants' background are given in Table 2.

Table 2
Participants' background information

Code	Age	Gender	Education	Subject Area	Ex (HoD)
Teacher 1	32	Female	MA in Education	**Chemistry**	**9 (1)**
Teacher 2	34	Female	MA in Education	**Biology**	**8 (4)**
Teacher 3	28	Female	MA in Education	**Biology**	**3 (2)**
Teacher 4	43	Male	Bachelor in Education	**Physics**	**20 (10+)**
Teacher 5	53	Male	Bachelor in Education	**Physics**	**28 (15+)**
Teacher 6	52	Female	MSc in Chemistry & Teaching Certificate	**Chemistry**	**11 (7)**
Teacher 8	50+	Male	MSc in Biology & Teaching Certificate	**Biology**	**20+ (10+)**
Teacher 9	35+	Male	MA in Education	**Mathematics**	**9 (5)**

Instrumentation

An interview guide consisting of semi-structured questions was used to interview the heads of science departments. The questions were prepared by the researcher, based on Hallinger framework as outlined in Table 1. At least one question and several prompts were created for each theme. The interview questions were also translated into Turkish to get more accurate responses from Turkish teachers (Appendix A). The interview questions focused on instructional leadership behaviours using the framework outlined by Hallinger (2003).

The interview guide consists of 11 questions and sub questions to assist participants direct their thoughts as they analysed their instructional leadership roles (Table 3).

Questions were asked one by one to each person and enough time was given to participants to feel relaxed and to enable them to respond to all of the questions. Prompts were given when deeper information was needed.

Table 3
Interview guide questions

Framework Theme	**Question**	**Prompts**
Curriculum management	Describe the curriculum your school follows with regards to instruction and assessment.	
Framing departmental goals	How do you frame your department's goals?	Do you use written policies and procedures established by the administration? Does your department write the policies and procedures? Does your department contribute to the policies and procedures?
Notifying teachers	How are teachers notified about the policies and procedures in your department?	Do all the teachers in your department understand the goals? Do you organize staff meetings to communicate and clarify policies and procedures?
Monitoring students' academic level	How do you monitor students' academic levels? How do you observe students' progress?	Do you prepare balanced assessment strategies for students? What is your grading strategy? Do you record data to analyse with regard to student achievement?
Providing incentives for students	How do you provide incentives for students?	How do you motivate them? Is lesson planning helpful as an incentive?
Protecting instructional time	How do you protect the instructional time?	What are the strategies to protect instructional time in your department's classes?
Maintaining high visibility	How do you maintain high visibility?	For example do you make classroom visits?
Providing professional development	How do you promote professional development for the teachers in your department?	Do you organize professional development workshops? Do you do instructional coaching for teachers? Do you make use of instructional technology? Do you provide individualized professional development? Do you organize mentoring for new teachers?
Providing incentives for teachers	How do you provide incentives for the teachers in your department?	Do you organize celebrations in the department? Do you encourage teachers with awards?
Supervision and evaluation teachers	How do you supervise and evaluate teachers' instructional skills (formally or informally) in your department?	Do you do staff reviews and evaluations? Do you do teacher observations? How often do you evaluate your teachers? What kind of feedback do you give?
General concluding question	How would you describe your leadership style?	

Method of data collection

Data were gathered by interviews. Heads of science departments were interviewed with the interview guide in their departments, in working hours.

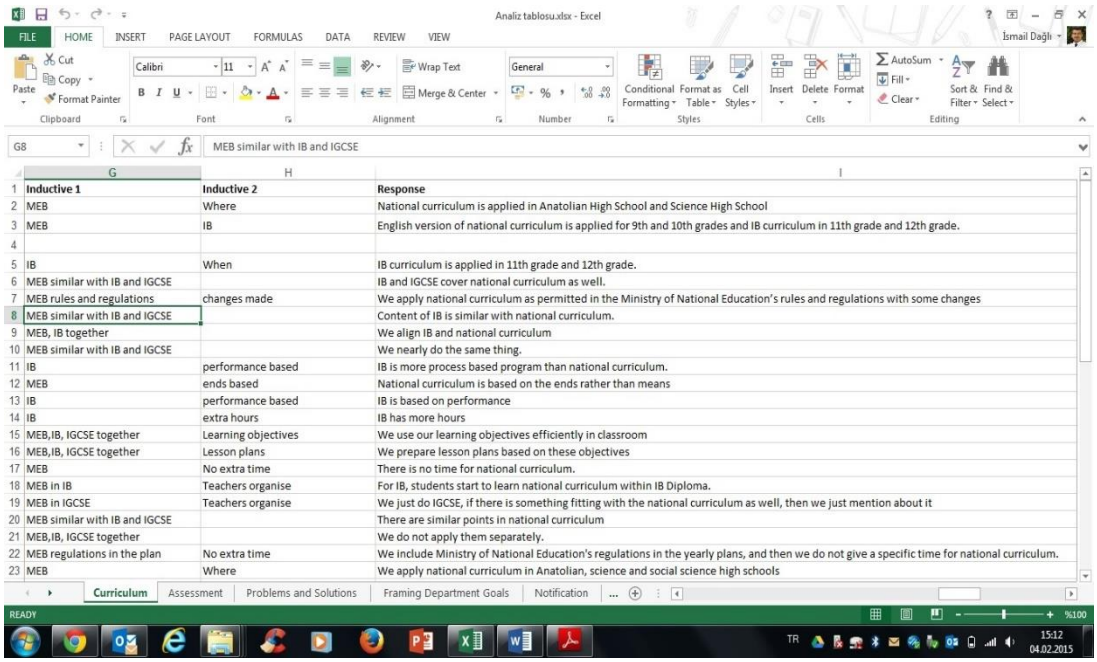
A pilot study was done in a private school which was also one of the participant schools, by interviewing one Turkish national teacher and one international teacher. Both had been heads of departments before. The pilot study helped to determine how long the interviews will take and two practice question delivery. No questions needed to be changed based on the pilot study results.

Appointments for interviews were taken in the first week of May, 2013. Data collection was finished on the first week of June, 2013.

All of the interviews were done by the researcher. All of the participants were asked for their consent for voice recording throughout the interviews. The researcher built a trust between himself and the interviewees which directly affects the perception of the participants (Wilson, 2013). Each interview took 30 minutes on average.

Method of data analysis

The content analysis method was used to analyse qualitative data. Content analysis is a method to convert qualitative data into quantitative data. Interviews as voice records were transcribed into text fragments using Excel software as given in Figure 1.



	G	H	I
1	**Inductive 1**	**Inductive 2**	**Response**
2	MEB	Where	National curriculum is applied in Anatolian High School and Science High School
3	MEB	IB	English version of national curriculum is applied for 9th and 10th grades and IB curriculum in 11th grade and 12th grade.
4			
5	IB	When	IB curriculum is applied in 11th grade and 12th grade.
6	MEB similar with IB and IGCSE		IB and IGCSE cover national curriculum as well.
7	MEB rules and regulations	changes made	We apply national curriculum as permitted in the Ministry of National Education's rules and regulations with some changes
8	MEB similar with IB and IGCSE		Content of IB is similar with national curriculum.
9	MEB, IB together		We align IB and national curriculum
10	MEB similar with IB and IGCSE		We nearly do the same thing.
11	IB	performance based	IB is more process based program than national curriculum.
12	MEB	ends based	National curriculum is based on the ends rather than means
13	IB	performance based	IB is based on performance
14	IB	extra hours	IB has more hours
15	MEB,IB, IGCSE together	Learning objectives	We use our learning objectives efficiently in classroom
16	MEB,IB, IGCSE together	Lesson plans	We prepare lesson plans based on these objectives
17	MEB	No extra time	There is no time for national curriculum.
18	MEB in IB	Teachers organise	For IB, students start to learn national curriculum within IB Diploma.
19	MEB in IGCSE	Teachers organise	We just do IGCSE, if there is something fitting with the national curriculum as well, then we just mention about it
20	MEB similar with IB and IGCSE		There are similar points in national curriculum
21	MEB,IB, IGCSE together		We do not apply them separately.
22	MEB regulations in the plan	No extra time	We include Ministry of National Education's regulations in the yearly plans, and then we do not give a specific time for national curriculum.
23	MEB	Where	We apply national curriculum in Anatolian, science and social science high schools

*Figure 1.*Text fragments and coding

The data gathered from the Turkish-speaking participants were translated into English. The responses were distributed into a priori codes as two levels (Inductive 1 and Inductive 2) which were determined before the study according to instructional leadership behaviours as seen in Figure 1. Coding is the way to link together the qualitative data according to the themes into different categories. Coding also facilitates the handling of the qualitative data, and creates patterns and ideas with regard to pre-determined themes throughout the data analyses (Taylor & Gibbs, 2010). After the data was clustered according to a priori codes, the prevalence of themes was analysed and noted. The results were tabulated.

CHAPTER 4: RESULTS

Introduction

The purpose of this study is to analyse how heads of science departments within some International Baccalaureate Diploma schools in Ankara show their instructional leadership role within their departments. The instructional leadership behaviours shown by these high school heads of science departments within their departments are described below in detailed analyses.

There are ten main themes which are connected to the research question: *How do heads of science departments within International Baccalaureate Diploma schools show their instructional leadership role*.

The themes are provided by the theoretical framework used in this research (Hallinger, 2003). They are:

- Curriculum management
- Framing departmental goals
- Notifying teachers
- Monitoring students' academic level
- Providing incentives for students
- Protecting instructional time
- Maintaining high visibility
- Providing professional development
- Providing incentives for teachers
- Supervision and evaluation of teachers

Results

Curriculum management

Heads of science departments were asked to comment on the curricula they followed. Their comments were general in nature, and concerned the problems of teaching two curricula (IBDP and MoNE).

All stated that they followed both the MoNE and IBDP curricula at the same time. They generally said that the concerns of both curricula are similar. They indicated that they tried to organise both curricula together, aligning syllabus, assessment, and practical work. One of the heads of science departments, T6, said that both curricula were integrated together so that "The school has its own curriculum which is written by the teachers who teach in the school." They also reported that they included activities of one curriculum in the other, to give a holistic curriculum which include MoNE and IBDP topics at the same time. A similar approach to teaching two curricula was reported by Ateşkan et al. (2015) in their analysis of curriculum alignment in Turkish high schools which also offered IB Diploma.

They also stated some of the differences between the IBDP and the MoNE curricula. The main difference was that the IBDP curriculum was more performance-based, while the MoNE curriculum was ends-based. A further difference was that some heads of science departments gave more importance to the IBDP curriculum, while others utilized the MoNE curriculum as a main frame. An advantage was that the IB curriculum allowed students to move all around the world, with its standardized content in IB schools.

Framing departmental goals

Heads of science departments were asked how they formed, articulated, and disseminated the goals of their department. It was clear that both school and department goals were clearly understood, discussed, adapted as necessary, and followed.

Two thirds (67%) replied that the department wrote their own departmental policies and procedures. They were written by their departmental teachers as a team, led by the head of department, within the school policies and procedures, and the MoNE rules (Table 4). Heads of science departments also asserted that the teachers as a group made needed changes and updates on the departmental policy and procedures, as necessary, from time to time. Heads of science departments were held responsible to the head of school to follow the policy and procedures of the school.

For instance, T6 replied that, "They (administration) tell us what is their mission and philosophy, and based on that we write our own department policies and procedures. Our policies and procedures for the department are exclusively written by the department."

Tables 4, 5, 6 give some further responses to this question, and show the variety of interpretation within departments.

Table 4
Framing departmental goals 1- Teachers write policies and procedures (n=4; 46%)

Teacher	Response
T6	Everything is written, all curriculum documents are written by the teachers, but of course it is based on the school's mission and philosophy also IB and IGCSE requirements in Turkish ministry requirements. They tell us what is their mission and philosophy, and based on that we write our own department policies and procedures. Our policies and procedures for the curriculum are exclusively written by the department. We as teachers come together once a year for the policy and procedure and curriculum writing process and we evaluate what we have done in this year. The school administration and board come up with the mission statement and their philosophy, but the curriculum is written in the department

Table 4. cont.

Framing departmental goals 1- Teachers write policies and procedures (n=4; 46%)

T3	As a department we have our own policies and procedures. We have homework procedures, based on our decisions
T7	Accordingly, we have institutive rules and regulations, but we also have improvements and changes on these rules and regulations. In that mission and vision, we have some parts to organise and publish as department. We do needed changes and improvements every year and publish it with renewing and editing the previous one. Department has its own mission and vision which is constituted in the past.
T9	The department goals, of course, reflect the school's objectives or vice versa. Beginning of each year we meet to decide/update these goals and evaluate the previous year. We have departmental goals.
T4	Within predetermined aims of school, goals are constituted by our heads of departments in general department meeting which is hold in throughout our partner schools. These constituted goals are followed by head of department of the school.
T5	I as a head of department and my colleagues decide our department's goals according to Ministry of National Education secondary education rules and regulations.

Almost one quarter (22%) of heads of science department replied that they use policies and procedures which were written by the school administration (Table 5). Departmental policies and procedures were changed by teachers as school policies and procedures changed, and sometimes adapted to departmental needs. Also, while they were contributing to the policies and procedures which were written by the school administration, they all took into consideration MoNE's rules and regulations.T2 replied: "We use policies and procedures which are written by the administration."

Table 5

Framing department goals 2- Administration writes policy and procedures (n=2; 22%)

Teacher	**Response**
T3	Our school has its own policies and procedures to be known by all the department. It is written by the administration.
T2	We use policies and procedures which are written by the administration. We just do some changes on these goals.

The rest of the heads of science departments indicated that they contributed to the policies and procedures which were written by the school administration as shown in Table 6. T8 stated, "The school writes the policies and procedures, we adapt those to meet our standards in our departments."

Table 6
Framing department goals 3- Teachers contribute to written policies and procedures (n=3; 33%)

Teacher	Response
T1	We are determining our goals and assessment strategies according to school's mission and vision which is also based on Ministry of Education's secondary education prescription.
T2	These goals are our main frame to write and establish our goals. We decides as a department for these changes.
T8	The school writes the policies and procedures, we adapt those to meet our standards in our departments.

Notifying teachers

Heads of science departments were asked how they notified members of their department about policies and procedures. Four important points were mentioned: organising staff meetings, organising online staff meetings, making teachers understand departmental goals, importance of team work.

Table 7, 8, 9 and 10 include points from their responses to indicate the range of response, department by department.

Table 7
Notifying teachers 1- Organising staff meetings (n=9; 100%)

Teacher	Responses
T5	I also organize weekly meetings. We have regular regime in the department. Everybody in the department should keep up with the general will. There should not be any objection to any decision after it is given.
T1	We are talking department's goals in the department meeting at the beginning of the year. We are discussing what should be done. If there are things to talk with regards to education and instruction, we are talking in the regular department meetings which are hold on every week.
T2	I organise weekly meetings. We have common free hours, so we find a chance to meet and discuss. We examine our policy and procedures at the department meetings which are held in every semester. Everything is told and discussed in that meeting.
T3	At the beginning of the semester we read the goals of the previous years and then we discuss whether we were successful or not to achieve these goals. Then we determine our new goals we sometimes update the goals since we think it may be more effective. We determine our own goals, and procedures, so every teacher has part on this step
T6	We do weekly meetings, but the big changes are discussed as I said once a year. We do meet once a week and all teachers come here. They exchange ideas, we discuss how the students were doing and if we need any changes and if they are quick changes they may be able to do it within the week.
T7	Then, we meet every week to evaluate each week what we did and what we will do, what is the next activity for learning, where we were and where we go. We have weekly meetings. In those meetings, especially in orientation period, we construct our strategy and plan for the present year and next year
T9	We have biweekly formal meetings and lots of informal meetings to decide, update, and apply the policies. If school requires immediate action on any issue, the meeting can be arranged more frequently.

Table 7 cont.
Notfying teachers 1- Organising staff meetings (n=9, 100%)

T8	Communication is critical if you want to achieve a goal, I organise department meetings. They are both written and verbalized in science meetings.
T4	We notify our teachers in every weekly meeting, yearly meetings done four times in a year, and a general meeting which covers all of the partner schools in Turkey.

All of the heads of science departments organised staff meetings to communicate and clarify the policies and procedures of their department, as shown in Table 7. They intended to continue communication through regular department meetings with their colleagues. They thought that communication was the key point for a successful department. In those regular meetings, heads of science departments provided a discussion environment, as T2 explained: "We examine our policy and procedures during the department meetings which are held every semester."

Heads of science departments also stated that they evaluated their weekly agenda, exchanged ideas, determined new departmental goals, and updated previous departmental goals. T7 answered: "Then, we meet every week to evaluate what we did and plan what we will do, the next activity for learning, where we were and where we go."

One-quarter (22%) of the heads of science departments replied that they had also organised online staff meetings as shown in Table 8. Those meetings were conducted via the school's Moodle program and departmental issues were discussed together when they could not meet.

Table 8
Notifying teachers 2- Organising online staff meetings (n=2; 22%)

Teacher	**Response**
T9	We also have Moodle discussion page to discuss all types of departmental issues
T6	We put everything together, but during the week we meet once a week and then we do have e mails, and very often e mails are exchanged. We visit each other as well, very often we see each other, most of us are in the same approximate area, so we get to see each other

Nearly one half (44%) of the heads of science departments interviewed were sure that their teachers understood departmental goals, they replied that everyone knew the departmental goals, throughout the department (Table 9). Two heads of science departments emphasized that all members of the department understood policies, and knew the goals as shown in Table 9. It follows that over half of the heads of science departments were not sure whether their teachers understood departmental goals or not.

Table 9
Notifying teachers 3- Understand (n=4; 44%)

Teacher	Response
T2	They all understand our goals.
T3	Everyone knows the goals of department. So we understand the goals.
T5	Everybody understands what are goals or targets.
T8	They all understand the policies and procedures.

The same number (22%) of heads of science departments focused on team work, which they said was important both to notify teachers, and gain their cooperation, as shown in Table 10.

Table 10
Notifying teachers 4- Teamwork (n=2; 22%)

Teacher	Response
T5	A good educator should work in a team.
T8	We discuss as a team. I absolutely feel that communication is the key.

Monitoring students' academic level

Heads of science departments were asked how they monitored students' academic levels and how they observed students' progress. There were three emerging points: preparing balanced assessment strategies for students, determining grading strategy, and having a data record to follow all students' achievements year by year.

Over three-quarters (78%) of heads of science departments replied that they prepared balanced assessment strategies, using formative assessment tools and summative

assessment tools at the same time. Formative assessment tools included science fairs, scientific projects, pre-tests, diagnostic tests, laboratory experiments, homework, quizzes, questioning to analyse students' knowledge. Summative assessment tools could be the same as formative assessment tools, and also included tests and quizzes, written exams, oral exams, essay writing, short answer exams, presentations, and assessed laboratory work.

Both T2 and T1 stated that written exam grades, quiz grades, and projects are included in the final assessment. T1 replied, "We take into account all of the assessment strategies together, since some of the students' success level is very high in class, but they cannot be successful in the exams. Ignoring their effort in the class and considering those students equal with the other students who do nothing would be injustice."

Tables 11, 12 and 13 indicate the diversity, breadth and fullness of response to this important part of the leadership role.

Table 11
Monitoring students 1- Balanced assessment strategies (n=7; 78%)

Teacher	Response
T3	We are trying to use balanced assessment strategies. We both have formative assessment and cumulative assessments as exams. We use past exam questions. We play with the mark scheme. For laboratory, we are doing alternative for practical. We are trying to include some quizzes and some projects. We try to adapt IB criteria to IGCSE lab works. We determine our own strategies for lab part. Students need to answer questions instead of doing practical. We do projects, prepare science fair. For grading, for IB, it has its own strategy and criteria for each task. We use its grading system. For IGCSE, we do not have criteria given by IGCSE. If students are academically not sufficient they need to attend after school classes. We include these assessments in the final grade or oral grade.
T1	According to the chemistry results in school wide placement test, we can observe level of each class. Besides, we can understand which misconception the student has, whether the student understand the lesson or not in the classroom. We are also preparing balanced assessment strategies. We take into account all of the assessment strategies together, since some of the students' success level is very high however they cannot be successful in the exams. Ignoring their effort in the class and considering those students equal with the other students who do nothing would be injustice. Placement test is done throughout the school. We consider both term homework, attitudes in class, and participation when we decide those two oral marks. Those assessments consist of 3 written and 2 oral examinations. Consequently we are assessing them with taking into consideration their behaviours in classroom, in class activities and their academic levels together.

Table 11 cont.

Monitoring students 1- Balanced assessment strategies (n=7; 78%)

T6	Several times in the department meetings, we look at that data and we analyse a student for likely to fail or who needs additional help. In addition to them we do have formative assessments to teachers may give several diagnostic test or pre understanding test. We do those, and at the end of the unit we give end of unit test. Other than that throughout the year we try the students giving some of those understanding of scientific theories and knowledge and able them to conduct experiment, and to analyse their data. Throughout the semester they give experimentation and least once a week and in those exams and experimentations they do write lab reports, so we interact with the students during their experimentation and we read their lab reports, once in a while we give those Moodle forums and online quizzes. At the end of the semester we give final test. At the end of the end of eighth grade we give a test to understand if the students are ready for IGCSE, and at the end of the year ten we give them a mock exam, and then the IGCSE exam. These are all summative assessments. We look at their successes in those areas, and then we give sometimes formal test and we look at them as well. Once in a while we get students who need to our school to those students may be struggling or for other reason, student may be have any other problem or personal problem or family problem all of these may be a reason, so we try to analyse those. We do have assessment eight times a semester. We do see those students after school, and we may give them additional diagnostic tests in addition to understand their level, academic achievement. Prior to those we have mock exams both for IB and IGCSE. In those exams we prepare very similar questions to IB and IGCSE exams. That gives an idea how the student will perform in those exams, and then we may do further preparation for those exams, but it is only for the exam preparation time period which may be only couple months.
T2	We give project homework which examines the process of student improvement while we also do summative assessments. We use laboratory grades, written exam grades, quiz grades when we give students' final marks. Written exam grades have heavier effect on final grade.
T7	IB's assessments are different. It requires more lab work. IB needs some extra work We need to work more for IB. It needs different assessment strategy and different team. IB teachers are different than the other teachers. Their teaching hours are less than others since they follow all of the requirements about IB teaching and assessment. IB class has less students also. Biology hours more than national curriculum in the IB. We do written exams, oral exams and projects as assessment. We decide the exam content. We prepare rubrics for written exams, projects and oral examinations. We do labs and students write lab reports.
T8	My grading strategy has to be based on Ministry of Education. We follow MoNE guidelines. That means three tests in a semester, two verbal marks, project component and lab component. Testing is just one component to observe students. I try to prepare balanced assessment strategies. It is not all about quizzes and tests. There are written assessments, essay assessments, short answer assessments, oral assessment, and oral presentation assessments.
T9	Regular quiz, end of unit tests, participation, and projects are used to check the academic levels of students.

It was clear also that heads of science departments looked for balance, in that they prepared balanced assessment strategies according to whichever curriculum they were applying (Turkish national curriculum, the IB Diploma curriculum, or the IGCSE curriculum). They aimed to prepare balanced assessment strategies in order also to analyse student success, ascertain the group's academic level, analyse students' misconceptions, and evaluate student behaviour. Teachers were using either MoNE or IBDP guidelines as appropriate as T8 pointed out "We follow MoNE guidelines." and T3 stated, "For grading for IB, it has its own strategy and criteria for each task."

One of the heads of science departments, T3, also added that they implemented two curricula at the same time, both MoNE and IBDP, both of which were complex. Therefore time management was important.

Another (T7) touched on preparing rubrics to help in arriving at the right decisions, for written exams, projects, and oral examinations.

Surprisingly, only just over half (56%) of heads of science departments stated explicitly that they had a grading strategy, as shown in Table 12. It must be assumed that others, too, had such a strategy but perhaps regarded it as too obvius to comment on. They decided their grading strategy according to earlier departmental decisions which were taken according to general exam results and curriculum needs. Teachers met to discuss the percentages of each grade.

Table 12
Monitoring students 2- Grading strategy (n=5; 56%)

Teacher	Response
T5	My colleagues ask for my idea with regards to grading.
T6	We look at the scores in all of these fields, and we need time if the student is concern with the student academic achievements. So with the combination of those we give them grade, but the formal grade summative grades, as I said 8 times a semester for each student. Our grading strategy is, for IB and IGCSE, we do not really grade them, so we do send assessment end of the year assessments to IB, and they assess them.
T7	We decide our grading strategy and assessment criteria at the beginning of the year. Then we decide the final grade.
T4	After written exams, we have a meeting as teachers Administrators attend that meeting too. We discuss possible problems about exam results.
T2	We decide our grading strategy.

Nearly all (89%) the heads of departments replied that they kept careful records of students' assessment (Table 13). They explained that they recorded data to compare each student's academic level, and were able to do so by analysis of cumulative data which they had recorded in the past. They also made interventions to students according to their exam result by comparing their older data, and stated that the

assessment records gave beneficial feedback. T8 answered that they wrote the data in a notebook, while T2 added that all exam results were recorded on online software.

Table 13
Monitoring students 3- Recording data (n=8; 89%)

Teacher	Response
T1	We comment with observing exam results. Also, comparison of one stream with another one, the average of success, and etc. are given to us according to the marks which are recorded to the system. All exam results are recorded to online software.
T3	This is a good feedback. When we face with parents we use that data as a feedback. We have academic progress tables. We can see academic situations. We use excel program to write the objectives, then this excel calculates means and achievement reports. We use excel to record data.
T8	I actually write the data to my notebook. We observe them as how they do in the exams, how they do in the laboratories, and etc. I record data only two or three times in a year.
T5	If we understand that any student has misconceptions, a recovery lesson is organized for them. If a student is academically weak, they are supported by us to keep them at the same level with the other students We have grading booklets and computer software program to record data. We use e okul, so Ministry of National Education can see the results too.
T2	We record data to our grade books and e school software. I record students' data.
T4	We have software which is named student following system. All teachers can see all of the information. Parents also can see their students' information, so parents can follow their students. Student information, homework, students' academic level, teacher comments are recorded to that system
T6	Yes, in Moodle we record all of the students' grades at each level, that may be a small quiz, that may be homework, but all of these are recorded and we analyse throughout the semester. We look at the data and if needed we interfere. We look at work with the students after school or between classes or weekends to catch student up to see if we can help any other way.
T7	In those tables that we prepare with Excel, there are weekly student following parts. Then we prepare a table. We record the percentages to weekly tables. IB teacher follows these reports and record data to tables. We check students every week and record their each assessment results to tables.
T5	Marks, that each student gets, are recorded to each students' grade portfolio.

Heads of science departments used online data-recording programs such as Excel, e-okul, and student review systems to record data. They created data tables and followed students week by week. They shared student information with other teachers in the school, families, and MoNE. Three teachers mentioned software, including Excel, and Moodle for recording grades, which could then be accessed by all.

Heads of science departments prepared student portfolios which include all student information, in order to follow a student from the beginning of the academic year to

the end. Marks, homework follow-up, and teacher comments were recorded in that portfolio, together with anything on the students' psychological situation.

T4 and T5 agreed that student information, homework, students' academic level, teacher comments were recorded to a system one by one and was used to create a grade portfolio.

Providing incentives for students

Heads of science departments were asked how they provided incentives for students. Two main points emerged to foster student learning in the classroom: motivating students and effective lesson planning.

More than three-quarters (78%) of heads of science departments thought that providing incentives for students required motivating students to make them learn and develop themselves, as shown in the comments given in Table 14. They rewarded their students to motivate their learning. They gave students coaching when students needed to be motivated to learn or to reach specific objectives. They believed that dialogue between teacher and student was also important to motivate them. Heads of science departments also reported that encouraging students via praising words orally, written praise, and communication with parents were important motivators.

Grading is another tool to make students motivated, they reported. Heads of science department stated that identifying targets, giving feedback, making science fun, motivation speeches were important to give students incentives for their learning. T4 pointed out (see Table 14) an interesting point that they gave private coaching for students who need to be motivated. T7 focused on the way to communicate with students and gain their respect. In another point of view, T6 added that

"Encouragement by words, letters, grades, communication with parents, and science fairs gives some reward."

Tables 14 and 15 give further details of the incentives used by heads of departments.

Table 14
Providing incentives for students 1- Motivation (n=7; 78%)

Teacher	Response
T3	Since these programs have some sort of criteria it is easier for us to give feedback.
T9	Small things like chocolate, candy. Motivation speeches. Grades.
T4	We give private coaching for students who need to be motivated. Since most of the students have rich families, they feel relaxed. Feeling relaxed prevents students to prepare exams. We explain that some universities give advantages to some students who have some extra skills such as English proficiency. It is easy to motivate smart kids, so we just give guidance to them. We put targets to motivate students.
T5	If necessary, we talk with student face to face. My colleagues do the same as well. If there are students who misbehave, however we do everything for them, we direct them to our counsellor. I remind my students the money which is spent on their education. I recommend them to feel different, and to feel privileged since they have more facilities than the other students.
T7	Individual support is also provided to achieve specific goals. Besides grading, your dialogue, control on students, and students' respect are very important to facilitate your job. We communicate with counsellor and their parents. The most important motivation is grading for this generation. We use grading as an incentive too. Worrying about grading is effective to be motivated for students, however it is not enough only. There is not a common strategy to incent students, since every group has different expectation.
T8	My philosophy is that science is fun. Science is exciting and science is a story. It is way of life.
T6	Encouragement words, letters, grades, communication with parents, communication with other parents and science fair in similar ideas, some rewards are given. We say good words, we write in their notebooks, we write comments to their Moodle, we write reference letters whenever they recommend. For our students luckily, they are highly motivated to get a very good mark, so good grades we try to award them with good grade that they can do something and also good encouragement.

On the other hand, they claimed that providing incentives for students to learn and achieve specific goals was hard for teachers since students felt relaxed and did not think about their future. In such situations, heads of science department said that they provided guidance to their students. If guidance was not successful, they asked for the help of the counsellor and students' parents. Interestingly, T1 and T4 focused on the same issue, namely that the present young generation is hardly motivated to learn since they live in the moment rather than questioning anything, and come from wealthy families, and are relaxed about their future.

Nearly half (44%) of heads of science department focused on the need of lesson planning to provide students with incentives during the lesson, as shown in Table 15. They referred to using daily life connections in the lesson, effective technology usage, and including attractive content for students to foster student participation in the lesson. Heads of departments had a commitment to preparing attractive and effective lesson plans. T1 remarked that starting a lesson with interesting examples from real life, and also trying to make lessons more enjoyable with technological devices and online experiments was used by their department. T2, also, supported that student participation was really important for an effective lesson. As a solution T8 said that science was like a novel with different chapters and sub-categories and making the connections gets his students into science, and makes his teaching and their learning easier.

Table 15
Providing incentives for students 2- Lesson planning (n=4; 44%)

Teacher	Response
T1	To incite students in the lesson, recently changed chemistry curriculum merged together with daily life. We start lesson with giving interesting examples from real life. Besides, we are doing experiments to attract students' minds. Also we are trying to make lesson more enjoyable with technological devices, and online experiments. The advantage of making lessons more enjoyable that it provides active learning climate, but disadvantage is that it makes hard to manage class
T2	Student participation is really important to do an effective lesson. It is very important that students should love the lesson and the teacher. Lessons that students watch animations and videos and do lab experiments are more effective than others. They fill worksheets which the department prepares for them. We encouraged them with praises in the lessons.
T7	Homework is given and followed.
T8	It is like a novel with lots of different chapters and lots of different sub categories. It is making the connections I get my students into it, not just methodology. It is much more than methodology. If I get my students into the science, I got them. It makes my teaching and their learning easier.

Protecting instructional time

Heads of science department were asked how they protected instructional time, and what the strategies were to protect instructional time in the classes in their

departments. Schools often cancelled or replaced lessons by other school activities, and even within a lesson, up to 25% of the time could be lost.

Within lessons all had a different timing strategy to protect instructional time. They stated that instructional time was a function of blending the learning time with the students' experiential time. They thought that high school students, could listen actively for the whole 45 minutes if the teaching achieved student engagement. However, some time was lost in each period and 45 minutes of instructional time was rarely achieved. Both T2 and T4 agreed on that point explicitly in their responses, and they stated that using the whole of the allocated time, 45 minutes, was impossible.

Heads of science departments asserted that teachers should keep students on task by using a variety of activities in these 45 minutes. For example, teachers should establish relationships between topics and daily life, so that students can be satisfied with the content of the lesson. Of course, teachers should have lesson plans before going to the class, which should focus on students rather than teachers, and include more time to involve students. These lesson plans should divide the lesson into three parts: lesson starter, during the lesson, and lesson plenary. In case of lesson cancellations, teachers needed an alternative plan. Lesson plans of all teachers were available to their heads of department, who could therefore check and affect planning.

Nearly half (44%) preferred to start the lesson with an attractive introduction as shown in Table 16. It may be videos, demonstrations, interesting questions, or a movie clip, "…classes begin with an interesting demonstration or interesting question to spark students' interest in a topic that we are going to discuss." They

preferred to take attendance at the beginning of the lesson, but as low-key as possible.

Tables 16, 17 and 18 give further details of responses.

Table 16
Protecting instructional time 1- Lesson starter (n=4; 44%)

Teacher	Response
T1	I generally announce results at the beginning of the lesson, since students wonder them too much.
T3	We do some starter activities. For older grades, we use videos and other activities.
T4	I start lessons with warm up activities which are applicable in all lessons.
T6	So, most of the times our classes begin with an interesting demonstration or interesting question to spark students' interest in a topic that we are going to discuss. So that may not be a lecture but it may be a demonstration or it may be a question, or it may be a movie clip, and then classroom discussion.

Heads of science departments preferred to do questioning to keep students on task. They also stated that there was a need to give a short break in the middle of the lesson, as stated in a comment in Table 17. One of them said that they used video demonstrations as a break. T1 answered that "If students get bored by the time passed, we give 5 – 10 minute break and talk about other things to make students active again."

Table 17
Protecting instructional time 2- Middle of the lesson (n=5; 56%)

Teacher	Response
T2	We give little breaks in the middle of the lesson. We use animations as breaks.
T3	We use little breaks in the classroom.
T7	We give little breaks in the middle of the lesson, and we tell funny stories etc.
T6	Most of the time our teaching style is student based, teaching rather than teacher centred, but we do also acknowledge the need of good lectures, good professional lectures is also needed That may include some research and encourage student to conduct a research, but the teacher lecture may be in that class, may be twenty minutes.
T1	Questioning students about relevant topic is the most beneficial one. We are doing this as whole department. Then, I use the following lesson as an exam revision lesson. We analyse and discuss the exam questions.

For the plenary at the end of the lesson, heads of science department used a summary activity with formative assessment (Table 18), such as pop quizzes or outcome cards (T3). If they do not use that activity students lose their attention. The term "zipper activity", was interesting, as one teacher (T6) summarized the lesson as a "zipping up".

Table 18
Protecting instructional time 3- Lesson plenary (n=2; 22%)

Teacher	Response
T6	Then, we sum up again with a zipper activity. The teacher zips everything together, so the students know what they are coming from, what they have done.
T3	For plenary activities, we use pop quizzes, outcome cards etc. If we do not use that activity students lose their attention

Maintaining high visibility

Heads of science department were asked how they maintained high visibility, and how they made classroom visits. The main ways of providing high visibility emerged as keeping classroom doors open, having corridor walkthroughs, organising meetings with their teachers, and positive communication.

Three quarters (78%) of them stated that they could easily maintain high visibility, (Table 19). They reported that providing healthy communication is the key step for a successful department, and they organised regular meetings to maintain the high visibility of the head of department in the department. They distributed different tasks to teachers and followed up on the tasks. They said that they worked in places where all teachers could see them such as department rooms, laboratories, classrooms or the head of department room. With regards to teaching, they wanted their teachers to keep doors open, and they made corridor walkthroughs to observe classrooms as well as classroom visits.

In addition to the methods above, they created an online communication web. They used mailing and messaging to make teachers feel their control of, and involvement in, the department. T8 believed that communication was the key and he asked if his teachers were comfortable or not. T2's strategy was having a permanent communication web such as e-mail to give a short message system to maintain high visibility. Also T5 added that he was in the physics laboratory when he was not teaching, and available to all to maintain visibility.

Tables 19 and 20 give detailed further responses to show the opinions of the heads of department.

Table 19
Maintaining high visibility 1- Maintain high visibility (n=7; 78%)

Teacher	Response
T2	I maintain high visibility. Students need to respect and love me. Students are more interested lessons if they love the teacher. Teacher must talk with the same language with the students. You need to make them believe that you exactly know the topic. We had some hard times in the department with regards to high visibility. After we discovered each other, everything got easier. We have permanent communication web. We use mails. We use short messages. We have meetings. Teachers who know the best about the ministry rules and the school organisation may be appointed as HoD too. We are good at communicating. Everybody can find me in the prep room.
T3	All of us need to do classroom visits. We interrupt the class in a good way to how they are doing with the lesson.
T4	General mechanism is that teachers are notified with responsible deputy principals in weekly meetings. Everything except the things which must be secret is explained. I organise meetings with biology, physics, and chemistry teachers.
T8	I always ask what they need. I asked if they are comfortable or not. Communication is the key.
T9	Informally yes! In a small school you can see everything!
T5	I am always in the corridor. I am in physics laboratory. I gave tasks to teachers.
T6	Most of the teachers leave the classroom doors open. Most of the time, our classroom doors are open. As you walk by, you can hear what is going on in the classroom. We give each other feedback as well. Sometimes we conduct experiments together, so for example we may have seen the eighth grade classes.

Also, nearly half (44%) of heads of science department stated that they made classroom visits (Table 20). Sometimes brief and unexpected classroom visits were made with a member of the administration. The main aim of classroom visits was to observe students and teachers in the classroom, and the quality of the instruction and classroom management were checked at the same time.

There occurred two quite different responses during the interview. T4 answered that they observed lessons together with an administrator twice a semester, and T3 observed both students and the teacher alone, and checked their achievements. On the other hand, interestingly, T8 said he was too busy to observe teachers.

Table 20
Maintaining high visibility 2- Classroom visits (n=4; 44%)

Teacher	Response
T4	We observe lessons together with administration for two times in a semester. I visit classrooms. I observe teachers, or appoint other teachers to observe teachers. We also do pop up classroom visits.
T8	I make every effort not to observe teachers since I have other responsibilities.
T3	We also observe students at the same time with the teacher. We check their achievements.
T6	Yes, we do visit each other's classroom. I do visit teachers classless and the teachers come and visit my classes as well.

Providing professional development

Heads of science departments were asked how they provided professional development for the teachers in their department. Nine important points emerged at the end of the analysis of their answers. These nine points were: Organising workshops, instructional coaching, mentoring, providing individualized professional development, providing workshops, use of instructional technology, developing instructional material, contributing to the organised professional development program, and academic intervention.

More than half (56%) stated that they organised workshops for their department as shown in Table 21. These workshops were about sharing experiences between teachers, sharing new ideas, sharing documents, international curriculum, classroom management, how to use school Moodle throughout the department, evaluation of subject area knowledge, and presentations related with any area in which they need to be educated.

T7 required teachers to give a presentation in each professional development period. These presentations could be about experiments, technology usage, student relations, and other topics.

In addition, teachers were sent overseas for their professional development within an international curriculum, and one head of science department (T3) said that the school sends at least one teacher overseas for a workshop per year. They could also be provided with professional development in their departments.

Tables 21 to 29 give the responses of heads of departments to this very important topic, under different headings.

Table 21
Providing professional development 1- Organising workshops (n=5; 56%)

Teacher	Response
T3	We share our acquisitions when we come back from any professional development. We share the important points. We make a presentation to each other about workshops. In every year we send at least one teacher overseas for workshops. We also have IGCSE workshop on every Wednesdays which all the faculty members sit together about teaching strategies, curriculum,
T6	Also, in the school we do have professional development days and for those days we teach to each other. For ex we are pretty fluent with Moodle and turnitin assignments and so I give a lecture to some other teachers. They may give something like classroom management, educational technology. At different times of the day there are several sessions, so you get to choose which ones you want to attend and they match throughout the day's goal.
T4	Other teachers improving themselves by the professional development organisations which are organized by the school.
T7	Every teacher does presentations in each professional development periods about what they prepare as a professional development subject. These presentations could be about experiments, technology usage, and student relations.
T8	I organise professional development workshops.

Two thirds (67%) of heads of science department replied that they gave instructional coaching to the departments' teachers, as shown in Table 22. The instructional coaching covered teaching sample lessons, making classroom visits for observation and feedback, and giving an open archive to new teachers. For example, T5 teaches

sample lessons, and wants them to teach sample lessons also. T1 answered that "We also brainstorm about topics which are a bit confusing to teach."

Table 22
Providing professional development 2- Instructional coaching (n=6; 67%)

Teacher	Response
T4	We do instructional coaching as department. We organise sample lessons to improve teaching methods for teachers. Teachers are given responsibility to teach sample lessons for other teachers. Experienced teachers present sample lessons. Teachers are discussing to improve teaching methods.
T7	We do instructional coaching to each other. We discuss in the department meetings. I advise something and share my experiences as well as they advise and share with me.
T1	All of us are doing instructional coaching to each other When we come together as a department, we are discussing about the topic that students cannot understand or the questions students ask. We also brain storm about the topics which are a bit confusing to teach. We ask questions and help each other if we faced with an obstacle.
T5	I organize meetings. I teach sample lessons, and I want them to teach sample lessons.
T6	Instructional coaching they are welcome to visit, we invite them to our classes and we visit their classes and if we see a need we interfere and we say this may be better you may want to try this methodology. In addition to that we also provide a moodle, previous teachers' Moodle achieve, so she can see how is that and we also show the assessment in that class. We give them IB and IGCSE website.
T3	We do instructional coaching. We give our teachers to try new methods and learn. Instructional coaching does not mean experience knows the best, we all do it.

They also gave mentoring to new teachers in the department, as shown in Table 23, T2 answered that "We do counselling for new teachers." T7, for example, mentors new teachers, since they have to adjust quickly to the system.

Table 23
Providing professional development 3- Mentoring (n=5; 56%)

Teacher	Response
T2	We do counselling to new teachers.
T3	We have mentoring.
T7	I do mentoring for new teachers, since they have to adjust quickly to the system.
T8	I have been a mentor for intern teachers.
T8	I also provide mentoring for new teachers.
T5	I also provide mentoring for my colleagues.
T5	I provide all needed mentoring both for teachers and students

Two thirds (67%) of heads of science departments replied that they provided individualized professional development for their teachers, as shown in

Table 24. They evaluated teachers' subject area knowledge individually, gave feedback to them, and provided them with a professional development course if their teachers needed one individually. For instance, T4 provided individual development

to their teachers, T2 checked teachers' academic knowledge, and T4 provided diction courses to one of our teachers since the teacher had problems.

Table 24
Providing professional development 4- Providing individualized professional development (n=6; 67%)

Teacher	Response
T2	I check teachers' academic knowledge.
T4	We provide individual development to our teachers. For instance, we provided diction courses to one of our teachers since he was speaking too fast.
T8	I provide individual professional development.
T1	I also provide individual professional development as oral recommendation
T5	I make some recommendations and warnings without any malevolence to make them benefit from my experiences.
T6	I may suggest.

Although heads of science departments said that they organised professional development for their teachers, two thirds provided other workshops or professional development programs if they could not organise sufficient professional development at school (Table 25). Teachers applied for these workshops, or the school sent them. They were usually workshops or conferences about the international curriculum used in the school. T8 thought that professional development was the function of science conventions, and conferences, and went on to say "I work with my administration to allow my staff to get the advantage of one or more of these development sessions." T6 answered that "For IB and IGCSE the institutions provide several professional developments, teachers apply for them."

Table 25
Providing professional development 5- Providing workshops (n=6; 67%)

Teacher	Response
T3	For the IB and IGCSE, we let them to participate online workshops.
T4	IB teachers attend seminars and workshops.
T6	For IB and IGCSE the institutions provide several professional developments, so our IB coordinator and IGCSE coordinator in also student teachers and the teachers apply for them.
T7	We also send our teachers to conferences to other provinces or cities, and want them to present in the department when they come back.
T8	I work with my administration to allow my staff get the advantage of one or more these development session. I share professional development workshops or conferences in a fair way.
T9	Our teachers apply for PD, if the PD committee accepts the necessity of the workshop; they send the teacher to the workshop/conference/course.

Nearly all (89%) heads of science department said that they used instructional technology (Table 26). These instructional technology tools were smart boards, data loggers, overhead projectors, projectors, laptops, online experiment tools, online assessment tools, and Moodle. They also reported that they had been trying to include more technology, since students were very good at technology. In some cases, they had to revert back to other plans, since the current technology sometimes crashed.

T7 answered that "We use instructional technology in the classroom, and the school is supporting us." T4 answered that "Our teachers use some supportive sites, such Edmodo," while T7 used data loggers, and new experimental sets. T1 answered that "Generally, I use the computer in class. I prepare presentations to avoid students having to write too much in the lesson," and T6 did a lot of visualization, virtual experiments and online databases to explain experiments.

Table 26
Providing professional development 6- Use of instructional technology (n=8; 89%)

Teacher	Response
T2	I use instructional technology. Computer, video, presentations, animations are used. We have no tablet, but we have laptops.
T3	Every teacher has laptops. We have iPads to discover new technologies. We are improving iPad usage to check e mails etc. For class we definitely use laptops. We ask students to bring their laptops. We use interactive animations on the board.
T4	I use instructional technology. I use smart boards. I do not use mailing so much. Our teachers use some supportive cites as Edmodo.
T7	We use instructional technology in the classroom and school is supporting us. We have been using presentation tools. We also use data loggers, new experimental sets.
T8	I use instructional technology, sure, but I don't use interactive things as good as younger students.
T1	We use instructional technology in the class. Generally, I use computer. I prepare presentations to avoid students to write too much in the lesson.
T5	I also use instructional technology.
T6	Each teacher has a laptop so we use a lot of the scientific concepts We do a lot of visualization, virtual experiments and online databases to explain our experiment We use Moodle mostly for homework and for letting students know what is going on in the class and letting parents know what is going on the class Also we give them online quizzes, so we can ask the questions.

Nearly a quarter (22 %) of them answered that they developed new instructional materials with teachers, and shared them with the other teachers as shown in Table 27 with T2 saying that they created projects together.

Table 27
Providing professional development 7- Developing instructional material (n=2; 22%)

Teacher	Response
T2	We create instructional materials together. We create projects together.
T4	We share instructional materials.

Nearly half (44 %) of them stated that they contributed to professional development which universities may sometimes organise for them, as shown in Table 28.

Table 28
Providing professional development 8- Contributed to the organised professional development program (n=4; 44%)

Teacher	Response
T2	We just give our ideas about which areas we need professional development.
T7	Extended professional development is provided by the school administration.
T1	School administration is organising professional development for us Experts are coming from universities and give conferences to us about the topics that we decided as a department.
T6	Yes I interact them from time to time. I do not have professional development session where they have, but school organizes this from time to time and I participate in them.

With regard to professional development on a daily basis, in the school, nearly one quarter (22 %) of heads of science department stated that sometimes they made an academic intervention in order to directly correct a teacher's methodology (Table 29), with T2 saying directly that she interferes in their methods if needed.

Table 29
Providing professional development 9- Academic intervention (n=2; 22%)

Teacher	Response
T8	Just one time I directly say a teacher that she is using the wrong material. We can't let them to continue if they are wrong.
T2	I interfere in their methods if needed.

Providing incentives for teachers

Heads of science department were asked how they provided incentives for teachers in their department. Having an awarding system and organising celebrations for teachers emerged as important points.

Over half (56 %) had an awarding system, in that they mainly used encouragement and praise for teachers who were successful (Table 30). They also promoted teachers by giving leadership responsibilities in the department, or gave anniversary awards for their teachers. They thought that awarding had a positive effect on teachers' performance.

T3 answered that "We are not giving awards, but we make them feel that they are successful. We make them feel the HoD is not the leader every time; also they may be leaders at the same time, whereas T7 preferred to reward teachers verbally, rather than with a present. T4 answered that "We give awards to teachers for length of service", and T8 preferred to use student evaluations of their teachers.

Tables 30 and 31 give details of their responses on this topic.

Table 30
Providing incentives for teachers 1- Awarding system (n=5; 56%)

Teacher	Response
T3	We are not giving awards, but we make them feel that they are successful. We ask our teachers for leading us to teach what they are successful about as an award. We make them feel the HoD is not the leader every time, also they may be leaders at the same time.
T4	We encourage our teachers as department and school. We give some awards who passed some years in their careers in the meetings that administration participates also. Awards are really important for teachers' performance.
T7	There are some difficulties with regards to awarding. We award our teachers verbally rather than award them with a present. If there is no award, teachers' motivation starts to decrease quickly.
T8	I do not give awards. My students did a survey, accordingly they announced best teachers. Awards both verbal and written make teachers feel good and happy.
T6	I don't have many ways of providing incentive to teachers. Other than encouragement, I let them know that I appreciate and students appreciate their role. I thank them and I try to provide opportunities for them not to only contribute but them grow professionally, so I try to look out for professional development opportunities for them. I do not do evaluations, but I let them, administrators, know if I notice some teachers doing everything asked for, doing above and beyond. Let the administrators know, so if that may be reflect as a salary bonus.

Two thirds (67%) of heads of department stated that they organised celebrations throughout the department such as dinners, or trips (Table 31). They thought that celebrations had a positive effect on teachers' performance.

T9 answered that they had a small department, they talked, and met informally out of school to celebrate anything. Similarly, T8's department went out to dinner and had social time together, while T4's department organised cultural trips.

To point out the positive effect of incentives T8 added that "It is really positive to keep teachers connected other than professional."

Table 31
Providing incentives for teachers 2- Celebrations for teacher (n=6; 67%)

Teacher	Response
T6	Celebrations we do science fair, so science fair is a big celebration for us other than that once in a while we celebrate birthdays and environmental day, at the end of the year we do end of year ceremony.
T3	We do celebrations in the department. We have fun sometimes.
T4	We organise dinners in teachers' day, students organise celebrations for us. As departments we organise cultural trips also.
T7	We sometimes organise celebrations as dinners.
T8	I organise celebrations. We went to dinner and has a good social time together. It is really positive to keep teacher connected other than professional.
T9	We only celebrate when the teachers leave the school We have a small department, we talk, we meet informally out of school.

Supervision and evaluation of teachers

Heads of science departments were asked how they supervised and evaluated teachers' instructional skills in their department. According to the answers, giving feedback, evaluating teachers, and doing teacher observation were the key points.

Two thirds (67 %) of heads of science department stated that they evaluated the teachers in their department (Table 32). They had a holistic approach to teacher evaluations. They took into consideration every aspect while evaluating teachers. Classroom visits, meetings, commissioning, demo lessons were used to evaluate

teachers. They stated that an administrator may also attend these types of evaluation. Some of them evaluated teachers informally, and then gave feedback.

T4 answered that “Education coordinators organise these evaluation procedures.” T7 answered that “We evaluate our teachers within a holistic frame.” T4 explained that classroom visits, teachers meetings, teacher evaluation, and sample lessons were parts of an evaluation mechanism.

Table 32, 33 and 34 show the variety and range of responses of instructional leaders of this sometimes difficult area.

Table 32
Supervision and evaluation of teachers 1- Teacher evaluation (n=6; 67%)

Teacher	Response
T2	Distributed lesson notes, problems which is reported in class, feedback, and information from administration help me to evaluate teachers. I do teacher evaluation once a year. We evaluate teachers together with administration.
T3	We write a report about what they have done in each month, about what they have succeeded, what works are in progress. We use administration's evaluation criteria for teacher observation. Since I am teaching for 3 years I am not evaluating teachers.
T4	Education coordinators organise these evaluation procedures. Classroom visits, teachers meetings, teacher commissioning, sample lessons etc are parts of a control mechanism. We have general teachers meeting to evaluate other teachers.
T7	We evaluate our teachers with regards to the results of students' academically evaluation. We evaluate our teachers within holistic frame.
T5	I share my individual observations in private, if administration wants any information. I talk with my colleague about the problem privately. We have no written policy or procedure with regards to evaluation of teacher performance.
T6	My evaluating is more informal, so I am just there to support the teachers,

Two-thirds (67 %) of the heads of science departments had observed teachers, in their classroom, teaching lessons (Table 33). These observations were both planned and pop-in observations. Administrators could also participate in the observations. They may, or may not, use teacher observation forms to observe teachers in the departments.

T3 answered that “We observe teachers, and report on our observations.” T5 answered that “We visit their classes and observe them together with someone from the administration.”

It is interesting to note that none stated that there was a formal appraisal system in the school. Nor that the evaluations described led directly to an increase in salary.

Table 33
Supervision and evaluation of teachers 2- Teacher observation (n=6; 67%)

Teacher	Response
T3	We observe teachers and mention in the report.
T4	We convince our teachers that these observations are for their development. We assign teachers to observe other teachers in the department. We use observation forms and share our ideas with the teacher.
T9	We do peer-observation informally; teacher evaluation is not part of job description of department coordinators.
T5	We visit their classes and observe them together with the administration. There is no regular teacher observation.
T6	I visit teachers classrooms and I keep an eye on the student progress by looking at their Moodle cite, their grade and their successes and summative and formative assessment.
T7	We observe our teachers at the same time. Generally, we observe our teachers for three times.

Three-quarters (78%) of them stated that they gave feedback to their teachers as a report of observation and evaluation as shown in Table 34. Feedback could be both oral and written, and it was constructive rather than being offensive.

Table 34
Supervision and evaluation of teachers 3- Giving feedback (n=7; 78%)

Teacher	Response
T2	I give oral feedback to my teachers.
T3	We just exchange ideas about what we think about the lesson and how we can improve it. The feedback is not so harsh. I give oral feedback which is constructivist way. Sometimes, I give feedback which is about negative things without being offensive.
T4	We share our ideas without being discouraging with our teachers. Feedback is both written and oral.
T7	The best feedback comes from students. I generally give verbal feedback.
T8	I just make suggestions like have you ever tried that or have you ever done this. We have to communicate.
T5	I did not write any report. I give feedback. I have not got any idea what other schools are doing, but we do not give written feedback. I warn them verbally. Feedback is generally constructivist.
T6	Several times in a year, they observe them and upon the observation they give them a feedback.

To conclude, it is clear that heads of science departments regard their role of instructional leadership positively and professionally. The leadership role they achieved, with regard to all ten of Hallinger's categories (curriculum management, framing departmental goals, notifying teachers, monitoring students, providing incentives for both students and teachers, protecting instructional time, being visible, professional development, and supervision) showed an understanding of the issues involved, and practical and effective ways of dealing with them (see Table 35). They also tried to develop new methods by creating new ideas about these issues in their departments in order to improve instructional performance of both students and teachers. The next chapter discusses and analyses the issues.

Table 35
Summary of the results

Overall results of the study theme by theme									
Curriculum management	**Framing departmental goals**	**Notifying teachers**	**Monitoring students' academic level**	**Providing incentives for students**	**Protecting instructional time**	**Maintaining high visibility**	**Providing professional development**	**Providing incentives for teachers**	**Supervision and evaluation of teachers**
Implementing IBDP & MoNE (100%) Time (100%)	Teachers write policies and procedures (67%) Administration writes policies and procedures (22%) Teachers contribute to written policies and procedures (33%)	Staff meetings (100%) Online staff meetings (22%) Understandable goals (44%) Teamwork (22%)	Balanced assessment strategies (78%) Grading Strategies (56%) Recording data (89%)	Motivation: feedback, little prizes, grade, private coaching (78%) Lesson planning (44%)	Lesson starter: attractive introduction, videos, demonstrations (44%) Middle of the lesson: break time (56%) Lesson plenary: zip up, exit cards etc. (22%)	Classroom visits (44%)	Organising workshops (56%) Instructional coaching (67%) Mentoring (56%) Individual professional development (67%) Providing workshops (67%) Use of technology (89%) Developing instructional material (22%) Contribute to organised professional development program (44%) Academic intervention (22%)	Awards (56%) Celebrations for teachers (67%)	Teacher evaluation (67%) Teacher observation (67%) Giving feedback (78%)

CHAPTER 5: DISCUSSION

Introduction

This chapter presents a review of the study, and discussion of the major findings.

The aim of the study was to analyse how heads of science departments in IB Diploma Schools show their instructional leadership.

The study addressed the following research question:

How do heads of science departments within IB Diploma Schools show their instructional leadership behaviours within their departments?

Overview of the study

This study focused on how heads of science departments show instructional leadership roles within IB Diploma Schools' science departments.

Content analysis method was used to analyse the qualitative data gathered from the heads of science departments in IB schools. The data was gathered in face-to-face interviews.

The study showed that heads of science departments as instructional leaders, fulfilled their responsibilities in the main, with diverse approaches, although there were points to be developed.

Major findings

Framework

The theoretical framework used in this study was that of Hallinger's (2003) leadership model for instructional leadership in which he breaks down the role of instructional leadership into ten component parts. Each part includes various aspects of the role. There is room for considerable overlap and interchange between the aspects of one part with another, which builds naturally into an understanding of the full complexity of such a leadership role.

The sections which follow discuss the findings of this research in terms of Hallinger's component parts of instructional leadership.

Curriculum management

The heads of science departments who were interviewed in this research were in schools where two curricula, in this case MoNE and IBDP curricula, were followed. As Hallinger and Murphy (1987); Gümüşeli (1996); Schmoker (2006) have stressed, heads of departments, as instructional leaders, organise, evaluate, and monitor the curriculum progress. However, in this research, the heads of science departments studied, organised and aligned two curricula. They said that applying two or more curricula at the same time is problematic because of time and materials, especially as the two curricula are different with regards to means and ends. The International Baccalaureate Diploma Programme curriculum is more performance-based than the Ministry of National Education (MoNE) curriculum. Heads of science departments say that it is easier to implement MoNE curriculum than implementing IB curriculum.

Framing departmental goals

Hallinger indicated that school leaders have a commitment to framing and implementing departmental goals. He also asserted that instructional leaders should be expert in the curriculum. In this way they may also show their instructional leadership skills more effectively (Hallinger, 2003). The results of the research show that the heads of science departments studied certainly have that commitment. They believe that departmental goals should be written by the department according to the general policies and procedures of their school. The research showed that departmental policies and procedures should be written by heads of science departments, since they and their department teachers are expert in the relevant curriculum, together with its means of assessment and all other attributes. However there were heads of science department who preferred to use only the pre-determined departmental policies and procedures without adaptation.

In addition, the participation of heads of science departments in actively running their department also facilitates their teachers' participation in school administration, teachers and their ideas are able to be represented in the school administration. IBDP schools have much to do with regard to writing policies and procedures in relation to the Diploma Programme, both at a general and a subject level. Sharing responsibilities facilitates the establishment of a common school policy and common procedures (Miller et al., 2010).

Notifying teachers

Communication among the members of the department was regarded as of prime importance by the heads of science department involved in this research as has been seen in other studies (Hallinger, 2003). So much so that participants were sure that departmental members understood departmental policies, procedures, and goals. The

research shows that staff meetings are the most common way to communicate with the department. Yearly plans, policies and procedures, assessment dates, and many other issues are discussed in those meetings. According to the research, all heads of science departments organised staff meetings to communicate about departmental issues.

Apart from face-to-face staff meetings, online staff meetings were organised by some heads of science departments to support communication throughout the department, and help teachers to take part in departmental decisions. Departmental issues can be discussed without any personal bias.

The heads of science departments valued team work, and therefore saw communication as important to notify teachers, also reported in previous studies (Blase & Blase, 1999; Mendel et al., 2002). It was shown here, as elsewhere (Mendel et al., 2002), that good team members are essential parts of the department, with regard to fulfilling departmental responsibilities.

The research also shows that good communication is highly rated with regard to the framing of departmental goals, policies and procedures. It was stated that teachers need to internalize the goals, policies and procedures in order to fulfil their responsibilities completely. In a Turkish school with two or more curricula, the system should work properly, and can do so only if all members of the department know their responsibilities to make the system function.

Monitoring students' academic levels

Heads of science departments in this study also all believed that one of their most important responsibilities was the monitoring of students' academic levels and progress. The careful monitoring of students work has been shown to be important

(Leitwood & Riehl, 2003), and instructional leaders are one of the stakeholders in student achievement. As instructional leaders they were concerned with effective instruction throughout the department, which involved several strategies to monitor and record student learning, progress, and achievement.

One of the emerging themes which nearly all heads of science departments shared was the need to prepare balanced assessment strategies (Marzano et al, 2005). These balanced assessment strategies including both summative and formative assessments, were mainly performance-based in the IB curriculum, and necessitated departmental decisions.

The alignment of assessments between the IB DP curriculum and the MoNE curriculum also needed leadership and departmental decisions. Grading was convertible to a certain extent in that grades given to IB diploma assessment tools could be converted to the MoNE grading system, to represent those assessments in the MoNE grading system. Although the MoNE curriculum limits the variety of assessments which can be applicable in the lessons, heads of science departments strive to include different assessment strategies in both their own and their colleagues' lessons.

Heads of science departments also stated that they had a departmental grading strategy, which is another facilitator to monitor students' academic levels. A grading strategy which is decided according to students' academic levels can prevent unfair approaches to student evaluation. Heads of science departments should have a departmental grading strategy, and carefully prepared rubrics were also written in the departments and used as facilitators to ensure fairness.

Fullan (2005) discussed the keeping of student data and its continuity as important to success. Similarly, another strong theme which emerged from the research involved the keeping of records. Heads of science departments saw one of their duties as recording data, which was highly connected with observing students' academic progress, especially in schools teaching more than one curriculum at the same time. Records, kept by all teachers under the leadership of the head of department, gave progress portfolios enabling students to be monitored both academically and behaviourally. Heads of science departments variously used online programs, grading notebooks and tables to see the whole picture of students' academic levels, shared within the department, and with other stakeholders.

Providing incentives for students

All the heads of science departments in the survey believed that motivation is the key factor for a student to complete or deal with a task. The main consensus was that the first step could be small rewards, such as praise which was thought to be beneficial as a motivator for most students (Hallinger, 1985). For further steps, coaching, guidance, and counselling were provided to students who could not be motivated in any other way. Many researches have agreed on a good relationship between teachers and students as one of the strong motivators for students (Miller et al., 2010; Hallinger, 2003).

Under their leadership, effective lesson planning was also considered to have a positive effect to provide incentives for students. Relating lessons with daily life, including attractive instructional strategies in the lesson, can gain students' attention, and heads of science departments assisted teachers in their lesson planning as necessary to achieve motivation.

Protecting instructional time

Heads of departments all agreed that instructional time was important, and had to be protected, both against external encroachment (such as sudden whole-school events) and internal loss of lesson time by lack of motivation in students, or time wasting activities. Heads of science departments surveyed all agreed that instructional time was important, as has also been discussed by other researchers (Hallinger, 2003; NASSP, 2007). It shows that the leader is involved, in control, and available. In their view, this involved including a variety of student-centred activities in lessons, relating topics to daily life, and having an opening motivator, and a final plenary. Heads of departments, in their leadership role, monitored and guided teachers as necessary in order to achieve maximum use of instructional time.

Maintaining high visibility

Instructional leaders have to be reachable to gain teachers' respect as a leader to give effective and on time feedback to teachers (Cooper et al., 2005). IB schools' heads of science departments provide high visibility by a variety of methods: being visible and available in their classroom or office, calling regular meeting, asking teachers to keep classroom doors open, reaching teachers with short messages, and corridor walkthroughs in normal times.

In addition, nearly half of heads of science departments organised classroom visits, either alone or with an administrator. They said this gave effective instructional leadership, but noted that they should include more internal instructional leadership practices for teachers in order to provide continuum of the quality.

Providing professional development

It was clear from the research that providing professional development was regarded as one of the most important parts in any leadership style, since a good leader should provide for personal development of their followers in order to contribute to personal satisfaction, improved teaching, and for the development of the institution (Blase & Blase, 1999).

The professional development organised by heads of science department was fulfilled in many different ways, to reach the same aim. It was thought that this instructional leadership practice was more general among Turkish IB DP schools, since IB requires some extra expectations. Teachers who will teach IB DP curriculum have to attend extra workshops.

Internally-organised workshops were commonly used for professional development opportunities. Individual instructional coaching of teachers was more general between heads of science departments and their teachers. This supports the finding of Mendel et al. (2002), who indicated that instructional leaders should organise meetings to share experiences gained from elsewhere with regard to teaching and learning. The choice of professional development depended on need, timing and budget. Instructional coaching does not need the participation of all teachers in the department, nor does it need a budget. Heads of science departments can easily meet individually with teachers and provide the needed support for teachers' professional development.

Closely linked to individual coaching was mentoring seen as another part of professional development by leaders. Mentoring is generally done for newly qualified teachers or new teachers in the department, and facilitates teachers'

orientation to the school. Heads of science departments thought that new teachers could easily and rapidly be assimilated into their department by mentoring. This may be increased by activities such as mentoring and organising workshops to meet IB's and MoNE's expectations from teachers.

If heads of science departments could not provide relevant workshops in the department, their practice was to send teachers away to workshops organised elsewhere. An example given was the IB curriculum workshops provided by IB.

As a second important leadership strand, nearly all of the heads of science departments reported they made use of instructional technology, and ensured that their teachers also did so. As well as being used in teaching, technology also facilitated management of the department.

Some of these instructional leaders also discussed the need to prepare a variety of assessment strategies for each kind of student, and the need to ensure that their teachers know how to produce new instructional materials appropriate to students' needs, and to maintain the quality of the instruction.

One leadership quality, that of appraising and criticising their teachers, and making academic interventions, was not much used by these heads of science departments. They said that they did not wish to be seen as offensive and overly critical. However they felt that interventions about academic knowledge and teaching methodology were accepted and acceptable.

Providing incentives for teachers

Heads of science departments felt that they should motivate their teachers to become a well-adjusted and collaborative team able to conduct the curriculum without problems. Well-established working teams have been noted in the literature (OECD,

2009) as crucial to success. Heads of science departments generally motivated by oral encouragement and praise, rather than giving awards. In some cases, leadership responsibilities were delegated to a teacher, who was then made to feel successful.

To help social interactions, celebrations were organised by nearly three quarters of the surveyed heads of science departments. Celebrations promote teachers' job satisfaction and establish good relationship between teachers.

Supervision and evaluation of teachers

A vitally important task is the supervision and evaluation of the teachers in a department. Heads of school rely on effective supervision and evaluation from their heads of science departments in order to maintain the success of the school. Hallinger (2009) noted that instructional leaders should have control throughout the department rooted in, and supported by, the school's administration. Since there should be a control mechanism in a department to supervise and evaluate teachers, heads of science departments reported that they are responsible for making evaluation and supervision in their departments.

Teacher evaluation is generally used to check their teachers' status with regard to the school's expectations, the heads of departments being accountable to the school administration for the success of their department. Teacher observations are also made to supervise teachers' skills. Heads of science departments give feedback to teachers for their self-development and for the school administration.

Conclusion

The heads of science departments are responsible lead teachers within departments regarding curriculum, curriculum implementation and supervision of how curriculum is applied. Therefore, they need to know how to organise their department, how to

guide their teachers and how to deal with the possible problems. This study investigated instructional leadership behaviours that address these responsibilities.

The study showed that although the heads of science departments demonstrated instructional leadership behaviours, they met with three obstacles while they were performing their responsibilities.

One obstacle was aligning two curricula (IB DP and MoNE) at the same time. These two curricula need different strategies to implement. Specifically, the IB DP curriculum is more performance-based, which requires more time and more work load from teachers because of its nature.

The second obstacle was allocation of time, which also negatively affected the alignment of the two curricula. The heads of science departments thought that time duration was limited when the needs of both curricula were taken into consideration.

Interestingly, the heads of science departments accepted the loss of lessons due to planned or unplanned school activities as normal, although they indicated that time loss was one of the obstacles they faced. None offered a critical comment about the loss of such teaching time. Lesson losses were due to preparation for a national assemblies, medical vaccinations, school assemblies, science fairs, parent conferences, teacher professional development and so forth. The mandated time for lessons suffered considerable losses through these school activities, but teachers understood and accepted the situation so much so that little comment was made.

The third obstacle to emerge from the study was the difficulty felt by the heads of departments in giving academic intervention to department teachers. Heads of science departments behaved in a deliberately tentative way toward teachers when it came to academic intervention; they were worried about being offensive to their staff

who were also colleagues. They were also concerned about disturbing the atmosphere of the department.

It became apparent during the interviews that there were some strategies that the heads of science departments could use to improve their leadership skills. For example, the study revealed that many of the heads of science departments had technology knowledge, but they did not utilize it effectively in their daily practices to organise their departments. Another interesting point is teamwork. Although an organised and effective department is related with effective teamwork and sharing responsibilities, only two heads of science departments indicated that they gave importance to the teamwork. A further point in Chapter 4, was that every teacher has a grading strategy. However, only a few of heads of science departments mentioned explicitly about their grading strategies. Therefore a more specific grading strategy with a shared understanding by the department, would improve their leadership actions.

Furthermore, the heads of science departments should have flexibility to create their own departmental goals within the school's policy and procedures. Finally, there is a strong need for effective lesson planning that is important to promote students' interests and to protect instructional time.

Overall the framework effectively helped to ascertain the instructional leadership behaviours of heads of science departments, however there are some points that may be added to the framework to improve its comprehensiveness. For example the following could be included: effective technology usage, lesson planning, and classroom management. These additions could help further analyse deeper into the leadership behaviours of the heads of science departments.

It can be seen from the results and discussion of this research that heads of departments in IB schools understand and perform their roles naturally with authority. They were not aware of Hallinger's model of instructional leadership which formed the theoretical framework of the study, but nonetheless led their departments with understanding and empathy leading, one must suppose from their comments, to a coherent approach to all the many issues faced. Their operation of their leadership tasks reflected the theoretical model which, in turn, adequately covered their responsibilities and tasks.

Implications for practice

The heads of science departments should receive professional development about their instructional leadership roles. It may be beneficial to make them internalize these roles with a series of professional development seminars, to facilitate the organization, implementation and supervision of the curricula within their department.

It would also be useful for heads of science departments to provide professional development throughout their department to inform their departmental teachers about teachers' instructional leadership.

Implication for further research

The perception of school administrators with regard to how heads of science departments perform their instructional leadership roles throughout the IBDP schools.

The perception of teachers with regard to how heads of science departments are fulfilling their instructional leadership roles throughout the school.

The effect of instructional leadership training on the effectiveness of head of department leadership.

A further study with a different tool.

Limitations

The research is limited to four International Baccalaureate Diploma Schools' heads of science departments in Ankara, Turkey.

The research is limited to three main instructional leadership roles which are indicated in Hallinger (2003)

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Appendix A: Interview Guide in Turkish

Mülakat Soruları

1. Okulunuzun takip ettiği müfredatı öğretim, ölçme ve değerlendirme bakımından tarif ediniz.

   Describe the curriculum your school follows with regards to instruction and assessment.

2. Zümrenizin amaçlarını nasıl oluşturursunuz?

   How do you frame your department's goals?

3. Eğitim ilke ve prosedürleriniz konusunda bölümünüzdeki öğretmenlerinizi nasıl bilgilendiriyorsunuz?

   How are teachers notified about the policies and procedures in your department?

4. Öğrencilerinizin akademik seviyelerini nasıl gözlersiniz?

   How do you monitor students' academic levels?

5. Öğrencilerinizi öğrenmeye nasıl teşvik edersiniz?

   How do you provide incentives for students?

6. Öğretim için ayrılan zamanı nasıl korursunuz? Zümrenizin sınıflarında öğretim zamanını korumak için kullandığınız yöntemler nelerdir?

   How do you protect the instructional time?

7. Sıklıkla öğrenci ve öğretmenleriniz ile beraber olmayı nasıl sağlarsınız?

   How do you maintain high visibility?

8. Öğretmenlerinizi nasıl teşvik edersiniz?

   How do you promote professional development for the teachers in your department?

9. Öğretmenlerinizi nasıl güdümlersiniz?

   How do you provide incentives for the teachers in your department?

10. Zümrenizdeki öğretmenlerin öğretim becerilerini nasıl denetler ve değerlendirirsiniz?

    How do you supervise and evaluate teachers' instructional skills?

11. Liderlik tarzınızı nasıl tanımlarsınız?

    How would you describe your leadership style?