

## The Effect of Work Motivation, Classroom Management and Critical Thinking Skills Towards Teachers' Competence in Inquiry-Based Learning

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### ABSTRACT

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*This research is a quantitative study using path analysis, which aims to measure the effect of work motivation, classroom management and critical thinking skills towards teachers' competence in IBL. The subjects involved in this study are 34 teachers at XYZ School. Data collection was obtained by distribution of questionnaires as primary data, analyzed using SmartPLS. Interviews and observation using checklist as secondary data were also recorded to observe data triangulation. The research was conducted on 28<sup>th</sup> March 2016 until 1<sup>st</sup> April 2016. The results obtained are that work motivation, classroom management and critical thinking skills has an effect of -0.619, 0.409, and -0.174 towards teachers' competence in IBL respectively. Work motivation has an effect of 0.082 and 0.147 towards classroom management and critical thinking skills respectively. Critical Thinking Skills has the strongest effect of 0.708 towards Classroom Management.*

## INTRODUCTION

Due to an increase in the number of schools implementing the IB programs, a limited number of studies have examined the efficacy of this program and the value that adds to teaching and learning. Teachers have varied experiences of how they were as students during their education, their initial teacher education, observing their colleagues, their practical experiences with students, and their continuous learning through reading, observing, attending sessions on their subject.

Most of the teachers in this school have had experience in the conventional method of teaching, where emphasis is on content-based rather than the process. Teachers were not trained to use their critical thinking skills, questioning and inquiry skills that has affected the classroom environment. Majority of the teachers are still lacking knowledge of the IB curriculum as a whole. Teachers reveal that there is also a big gap in the effective implementation of Inquiry-Based Learning (IBL) in the classroom, because they find the planning time-consuming and most teachers are unable to complete the lessons as required. They are also confused with the proper implementation of the IBL.

Despite of the problem stated above, another factor is that the students in this school have also undergone transition from a different curriculum, which was based on conventional learning instead of student-centered approach. Concepts learnt resulted in short-term memory and are not integrated into the students' real world experiences. As a result, their learning is declining and they have a negative attitude towards excelling in education.

To address the problems identified above, the research questions were as follows:

1. Is there an effect of work motivation towards teachers' competence in Inquiry-Based learning?
2. Is there an effect of classroom management towards teachers' competence in Inquiry-Based learning?
3. Is there an effect of critical thinking skills towards teachers' competence in Inquiry-Based learning?
4. Is there an effect of work motivation towards critical thinking skills?
5. Is there an effect of work motivation towards classroom management?
6. Is there an effect of critical thinking skills towards classroom Management?

## LITERATURE REVIEW

This research was grounded on theories of the International Baccalaureate (IB) curriculum, Middle Years Program (MYP), teachers' competence, Inquiry-Based Learning (IBL), work motivation, classroom management, and critical thinking.

### *International Baccalaureate Curriculum*

Nugent & Karnes, 2002 as cited in Stillisano, et al. (2011, p. 171) states that the International Baccalaureate Organization (IBO) was founded in 1968. The IB offers programs of international education develops the intellectual, personal, emotional and social skills of individuals to live, learn and work in a rapidly globalizing world. The IB has a hard-earned reputation for high standards of teaching, pedagogical leadership and student achievement. The IB program supports schools in providing students with challenging academic programs that encourages critical thinking from an intercultural perspective.

The IBO offers three programs of study: Primary Years Program (PYP) for students aged 3–12 years old, that starts from early childhood or preschool level until grade 6. Middle Years Program (MYP), a five-year program available since 1994. for students aged 11–16, that

continues from grade 7 until grade 10. Diploma Program (DP), a two-year program available since the late 1960s. This course of study is an internationally recognized pre-university program for students above 16 years.

IBO (2002) as cited in Walker et al. (2016), states that the Learner Profile (LP) is a set of attributes in which students are expected to develop through the IB programs. Ten attributes are used to describe the values, attitudes, and behaviors that need to be developed in students. The LP is connected to the learning and developmental theories which is grouped into four learning themes, which provides a theoretical framework to support articulation of pedagogy, curriculum and assessment in the IB. The learning themes are: 1) Cognitive or Intellectual to knowledge acquisition, such as knowledgeable, thinkers, and reflective; 2) Conative or Personal to motivational theory, such as inquirers, principled; 3) Affective or Emotional to social development theory, such as caring, risk-takers and balanced; and 4) Cultural or Social to social constructivist theory, such as communicators and open-minded. Bergeron and Dean (2013,62) emphasizes on the teacher's ability to be a model for their students by demonstrating attributes from the learners' Profile within the International Baccalaureate Program.

### ***Middle Year Program Curriculum (MYP)***

The framework of the MYP curriculum was produced in 1987, which emphasized on developing the skills and attitudes, the understanding of concepts and the knowledge needed to participate in an increasingly global society. The International Baccalaureate (2014, pp. 1–3) states that IB's continuum of international education in which the MYP follows the PYP and can serve as excellent preparation for the DP. It is not a requirement that schools adopt all these three programs. However, many choose to do so because of the similarity in philosophy and the coherence of their approaches.

The first ring around the center describes the features of the program that help students develop disciplinary and interdisciplinary understanding:

1. Approaches to Learning (ATL), which demonstrates a commitment to approaches to learning as a key component of the MYP for developing skills for learning;
2. Approaches to Teaching (ATT) emphasizes pedagogy of the MYP, which includes collaborative learning through inquiry;
3. Concepts highlighting a concept-driven curriculum; and
4. Global contexts showing how learning takes place in context.

In the MYP, all teaching and learning is planned through MYP units of work. In each unit, teachers and students will generate questions and inquiries that have a conceptual base and that are relevant to the MYP unit question. Classroom experiences will be planned as direct response to these questions and inquiries. The classroom will become a center of structured inquiry through which students acquire, practice skills and build new knowledge.

### ***Teachers' Competence***

Alake-Tuenter et al. (2012, p. 2614) define 'competence' as the individual's capabilities and a process, which develops throughout their lives. Brett et al. 2009 as cited in Bergeron and Dean (2013, p. 10), elaborates on the elements to achieve excellent competences. This includes:

- 1) Knowledge which can be categorized as:
  - a) Subject Matter Knowledge- According to Stronge (2007, p. 10), SMK positively affects teaching performance. Katz, Sadler, & Craig, 2005; Lee et al., 2004 as cited in Alake-Tuenter, et al. (2012, p. 2617), concludes that teachers need accurate and comprehensive mastery of subject matter in order to teach the content successfully.
  - b) Pedagogical Content Knowledge (PCK)- Schulman, 1986 as cited in Bergeron and Dean (2013, p. 11) defines PCK as the approach and practice that teachers use to

facilitate to teach a specific subject. Avraamidou & Zembal-Saul, 2010; Davis, 2005 as cited in Alake-Tuenter, et al. (2012, p. 2618) states that teachers require knowledge that blends subject matter and pedagogy.

- c) Knowledge of Curriculum - Forbes & Davis, 2010; Glynn & Winter, 2004; Marble, 2007 as cited in Alake-Tuenter, et al. (2012, pp. 2619–2620) state that teaching starts with selecting and adapting curriculum materials.

## 2) Attitudes, behaviors and dispositions.

According to Bergeron and Dean (2013, pp. 10–11), it is important for every teacher to have appropriate attitudes, behavior, and dispositions. Dispositions are the values, commitments, and professional ethics that influence behavior towards students, family, colleagues and communities, and affect motivation and development as well as the teachers' professional growth.

- a) Hattie, 2003 as cited in Bergeron and Dean (2013, pp. 15–19) reveals the Strategies and Qualities of Good teachers includes lesson planning and preparation, understanding children's learning, influencing motivation, classroom management, and teachers' personal disposition.
- b) Riley 2003, as cited in Bergeron and Dean (2013, pp. 18–19) states the characteristics of excellent teachers. Teachers should be enthusiastic, energetic and creates excitement for teaching. Teachers are flexible and adapt with confidence and firmness. Teachers encourages with resilience, flexibility and innovation. Teachers have sense of humor and emotional intelligence. Teachers are creative, intelligent and practice divergent thinking.
- c) Teachers should possess skills, such as procedural skills, cognitive skills and experiential skills. The International Baccalaureate (2014, p. 21) states that all teachers in MYP schools should integrate these skills; 1) Attitude Towards Learning (ATL) skills which can be learned and taught, improved with practice and developed incrementally. IB programs identify five ATL skill categories, such as communication, social, self-management, research, and thinking. These ATL skills are further expanded into developmentally appropriate skill clusters, such as communication, collaboration, organization, affective, reflection, information literacy, media literacy, critical thinking, creative thinking, and transfer; 2) Attitude Towards Teaching (ATT) emphasizes that the MYP promotes balance and a meaningful choice in teaching strategies that can include inquiry learning, lectures, demonstrations, memorization and individual practice.

### ***Inquiry-Based Learning***

Galileo Educational Network, 2004 as cited in Alberta Learning (2004, p. 1) defines 'Inquiry' as a dynamic process of thinking in a broad manner to know and understand the world. According to Aldridge and Goldman (2007, p. 110), curriculum implemented as inquiry in a classroom has various advantages: 1) It encourages student interaction in groups; 2) It creates an inquiring environment that encourages children to explore and learn more about the topics, which becomes the them; 3) It enables the students to be active; 4) It enables students to make decisions, encourage them to explore and construct their own meaning.

Donham (2001), as cited in Alberta Learning (2004, pp. 8–9) emphasizes on the use of an inquiry model, which supports the work of teachers and can be used in a variety of ways.

- 1) The Inquiry Model as a scaffold for instruction, which provides content and structure for instruction, outlining the skills and strategies taught in each phase.
- 2) The Inquiry Model as a gauge for feelings, which brings feelings, such as enthusiasm, apprehension, frustration and excitement.

- 3) The Inquiry Model as a common language for teachers and students, which helps students to internalize the model and discuss about the learning processes involved, which increases effective communication among all inquirers in a school.
- 4) The Inquiry Model as a guide for students which uses an analytical approach that includes all phases in the inquiry process, to have a broad view of inquiry.
- 5) The Inquiry Model as a guide for monitoring used by teachers to assess how effectively students have engaged in the inquiry process, how deeply they understand it, and how effectively the process has been sequenced across grades.

The process of inquiry is important to all phases in the Inquiry Model, which includes both the affective and cognitive domains associated with metacognition, as stated in Alberta Learning (2004, pp. 11–13). The phases are: 1) Planning Phase where teachers should provide information and background that motivate students with little or no background knowledge of a topic; 2) Retrieving Phase where teachers need to help inquirers to understand the information they find; 3) Processing Phase where teachers should teach students how to compare, contrast and synthesize data; 4) Creating Phase where teachers need to build on their students' feeling of confidence and teach for skills and strategies that enable students to narrow down or focus on their creation; 5) Sharing Phase, in which teachers need to teach students appreciation skills and strategies and focus on the positive that helps to support them in this phase; 6) Evaluating Phase, in which teachers need to emphasize on the students' understanding and question the evaluation criteria, identify the steps in their inquiry process, and share their feelings about the process.

According to Aldridge and Goldman (2007, pp. 109–110), teachers have an important role in Inquiry-Based Learning; 1) According to Drayton & Falk (2001) in Alberta Learning (2004, p. 4), teachers need to encourage students to take ownership of their learning; 2) According to Goos (2004) as cited in Brune (2010, p. 7), the teacher must be able to redirect the students when necessary and closely monitor students' processes, adjust quickly to individual student needs, and be ready to face the challenges within the classroom of inquiry.

However, there are benefits and challenges of IBL. The benefits are that learners gain knowledge about inquiry focus, develop thinking and reasoning skills, develop metacognitive skills, and develop positive attitudes towards inquiry and appreciation for the tentativeness of knowledge.

Edelson et al. (1999) summarize five general challenges in designing inquiry-based learning: 1) motivating students to engage in inquiry-based learning; 2) students mastering inquiry strategies (for example, interpret problems, data collection and analysis); 3) covering enough content knowledge of the topic for inquiry-based learning; 4) students managing and coordinating complex activities and resources in open-ended inquiry-based learning; 5) practical constraints of the learning context (lack of technology, large class size, and so on).

### ***Work Motivation***

According to Dörnyei & Ushioda (2001, p. 4), 'Motivation' is the direction in which the human behavior aims at, that is the choice of a particular action, the persistence with it, and the effort expended on it. Santrock (2008, pp. 451–453) states that there are four perspectives related to Motivation. They are Behavioral Perspective, Humanistic Perspective, Cognitive Perspective and Social Perspective. The behavioral perspective emphasis on the importance of extrinsic motivation in achievement, the humanistic and cognitive approaches stress the importance of intrinsic motivation to solve problems, have insight and gain understanding, particularly in ambiguous or problematic situations.

There are two factors of motivation found in an individual, which are intrinsic and extrinsic motivation. An individual can be extrinsically motivated and intrinsically motivated.



Intrinsic work values include individuals doing interesting work, challenging work, learning new things, making important contributions, reaching full potential at work, responsibility and autonomy, and being creative. Extrinsic work values include high pay, job security, job benefits, status in wider community, social contacts, time with family, and time for hobbies.

The measures of intrinsically motivated individuals are: 1) According to Santrock (2008, p. 454), teachers should possess self-determination, in which emphasizes the experiences of choice in the regulation of behaviors and personal choice, in which teachers see themselves as competent; 2) According to Uno (2008, p. 112), individuals should be responsible towards tasks assigned, which includes working to the maximum ability (diligence), responsibility towards tasks, ability to achieve the aims and objectives of the task and give their full dedication. Individuals should also be enthusiastic and independent, encouraged towards success; rewards gained and excel towards a particular task. Individuals are independent towards actions and assigned tasks and are able to face challenges; 3) According to McInerney and McInerney (2006, pp. 208–211), individuals are intrinsically motivated when they perceive tasks as interesting, relevant, and meaningful in their life.

Some measures of Extrinsic Motivation are: 1) According to George and Gareth (2012, p. 160), individuals who are extrinsically motivated desire some of the consequences of working, such as having status in the community and social contacts; 2) According to Langton, et al. (2010, p. 108), individuals who are extrinsically motivated emphasize on bonuses, and other tangible rewards.

The main theories of motivation fall into two categories: Needs Theories and Process Theories. Each theory addresses different questions about motivation in organizations and the relationships between inputs, performance, and outcomes. Needs theories of motivation, including Maslow's hierarchy of needs, Alderfer's ERG theory, McClelland's theory of needs, and Herzberg's motivation hygiene theory all propose a similar idea. They conclude that individuals have needs, which when unsatisfied will result in lower motivation.

According to Langton et al. (2010, p. 112), Needs theories are usually observed in workplaces. Individuals have needs and they could be highly motivated to achieve those needs. The types of needs and their importance can vary from each individual to another, and can differ over time depending on one's stage in life. Some employees may be struggling to make ends meet, while others are looking for opportunities to reach self-actualization.

Process theories identify the needs that could be used to motivate individuals; process theories focus on a broader picture of how someone can motivate another individual. Process theories include expectancy theory and goal-setting theory.

Expectancy theory proposed by Victor Vroom as cited in Langton, et al. (2010, p. 114), involves the cognitive process and individuals undergo to make choices among choices, which will result in successful performance. This theory focuses on three relationships that are expectancy, instrumentality, and valence, which happen in the workplace.

According to Langton et al. (2010, p. 116), Goal setting theory was proposed by Edwin Locke and his colleague Professor Gary Latham at the University of Toronto. A goal is what an individual is trying to accomplish; it is the object or aim of an action. Goal tells an individual what needs to be done and how much effort will need to be expended.

According to Reeve (2009, p. 13), there are eight themes run through motivation study 1) motivation benefits adaptation; 2) motives direct attention and prepare actions; 3) motives vary over time and influence the ongoing stream of behavior; 4) types of motivation exists; 5) motivation includes both approach and avoidance tendencies; 6) motivation study reveals what people want; 7) to flourish, motivation needs supportive conditions; and 8) there is nothing so practical as a good theory.

### ***Classroom Management***

According to Jere Brophy 1988 in Jones and Jones (2012, p. 16), Classroom Management is eliciting cooperation of the students' engagement in class activities, minimizing misconduct and the ability to intervene effectively when misconduct occurs. He also states that Classroom Management includes planning well-organized, engaging lessons and ensuring on-task student behavior by teaching students classroom procedures to facilitate smooth implementation of lessons and making management decisions that enhanced on-task behaviors.

Jere Brophy 1988 as cited in Jones and Jones (2012, p. 16-17), Comprehensive Classroom Management should include four areas of knowledge and skills: 1) Classroom Management should be based on understanding of students' personal, psychological and academic needs; 2) Classroom Management depends on creating a positive classroom climate with a support by establishing positive teacher-student and peer relationships; having positive involvement with students' parents and using organizational and group management methods in developing and committing to students' behavior standards which facilitates them being on task; 3) Comprehensive classroom management involves using instructional methods that facilitate optimal learning by responding to the academic needs of individual students and the classroom group; 4) Classroom management involves the ability to use a wide range of counseling and behavioral methods that involve students in examining and correcting their inappropriate behavior.

Kounin, 1977 as cited in Schunk and Meece (2008, pp. 340–342) states that effective classroom management involves some proactive teacher activities that relate positively with group management. Some characteristics are : 1) Withitness, a significant predictor of good classroom management which is a teacher's communicating to the students by her actual behavior that she knows what the children are doing, or has the proverbial eyes in back of her head; 2) Overlapping, a second important characteristic, is defined as what teachers do when they have two matters to deal with simultaneously; 3) Movement management, is a third important attribute, which reflects how smoothly teachers keep lessons moving and make transitions between activities. It is important to keep a smooth classroom pace, maintain momentum, and avoid jerkiness in transitions; 4) Group focus refers to the teachers efforts to keep students on task, consists of three dimensions, such as group alerting, which refers to the extent that the teacher maintains student attention during a group activity; b) Accountability, which means that each student in the group is responsible for learning the concepts being taught; c) Format, which involves grouping students in such a way in order to facilitate active participation by all students.

Some measures of classroom management are:

1. Planning- McInerney and McInerney (2006, p. 263) state that teachers need to plan before the school year starts what their room arrangement will be like in order to facilitate the types of instruction and learning activities that they will be using, necessary rules and procedures to maintain effective teaching environment. According to Jere Brophy (1988) as cited in Jones and Jones (2012), teachers should plan well-organized, engaging lessons and ensure on-task student behavior by teaching students classroom procedures for smooth implementation of lessons and making management decisions that enhanced on-task behaviors. According to Bajao (2015), teachers should allow flexibility and fluidity, allowing collaboration, responsive to emergent needs.
2. Organizing- According to Wong and Wong (2009,10-30), teachers should have a sense of time value. Teachers should also be involved with students' work, especially in academics and teacher-led instruction. According to Bajao (2015), teacher need to focus on issues of group work and collaborative learning, emphasize diversity of learners.
3. Teachers' Support- According to Jere Brophy 1988 in Jones and Jones (2004,16-17), teachers create a positive classroom climate and a community of support by establishing

positive teacher-student and peer relationships. Teachers should also understand students' personal, psychological and academic needs.

4. Task Orientation- According to Wong and Wong (2009, pp. 10–30), teachers should make students aware of what is expected from them through their goals and objectives presented by the teacher at the beginning of the activity. According to Bajao (2015), the teacher should emphasize and encourage students to stay on task and complete assignments; the class knows exactly what has to be done. Teachers should also encourage learners to become part of developing class rules and partnership ensuring order and discipline.

### ***Critical Thinking***

According to Paul and Elder (2002), critical thinking is a self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities. Paul and Elder (2005) state twenty-five Critical Thinking Competency Standards. They are divided into six sections: Standards 1 to 8: Elements of reasoning, Standards 9: Universal Intellectual Standards, Standards 10-17: Intellectual traits, virtues or dispositions, Standards 18-19: Barriers to the development of reasoning, Standards 20-23: Focusing on critical thinking skills essential to learning, Standards 24-25: Focusing on specific domains of thought.

According to Paul and Elder (2002, pp. 15–18, 101–108), a well-cultivated thinker has the following characteristics: 1) Clarity - A well-cultivated critical thinker raises vital questions and problems, formulating them clearly and precisely; 2) Accuracy - Good thinkers listen carefully to statements and, when there is a reason for scepticism, question whether what they hear is true and accurate. Critical thinkers force themselves to assess their own views and others; 3) Precision - A well-cultivated critical thinker gathers and assesses relevant information, and effectively interprets it; 4) Relevance - A well-cultivated critical thinker tests the conclusions and solutions against relevant criteria and standards; 5) Depth - A critical thinker thinks deeply when they get beneath the surface of an issue or problem; identify the complexities inherent in it. Even when we think deeply and deal with the complexities in a question, we may find the question difficult to address; 6) Breadth - A critical thinker should be broad-minded; 7) Logicalness - A well-cultivated critical thinker thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences. Their combined thoughts are mutually supporting and make sense in combination, the thinking is logical; 8) Significance - Critical thinkers should reason through issues and concentrate on the most important information relevance to the issue in our reasoning and take into account the most important ideas or concepts; 9) Completeness – A well-cultivated thinker communicates effectively with others in figuring out solutions to complex problems; 10) Fairness – Critical thinkers strive to be fair-minded.

According to Alan (Bensley, pp. 6–7), the benefits of critical thinking are: 1) Critical thinking can improve both how and what people think about a variety of questions and; 2) Critical thinking can help a person to make decisions and decide the best conclusion that happens in a particular situation after carefully considering the evidence.

## **RESEARCH METHODOLOGY**

This study is a correlational research and aims to measure the effect between the variables. The variables in this study are Work Motivation, Classroom Management, and Critical Thinking Skills towards the Teachers' Competence Inquiry-Based learning in the Middle Years Program (MYP) in the International Baccalaureate (IB) Curriculum.



This research was conducted in school XYZ, located at Pantai Indah Kapuk, Jakarta Utara. This school implements the Middle Years Program (MYP), one of the programs following the International Baccalaureate (IB) Curriculum Data collection in the form of questionnaire and interview was conducted from 28<sup>th</sup> March till 1<sup>st</sup> April 2016. The MYP has a total of 34 teachers. The research uses quantitative method, which utilizes three instruments, Questionnaires, Interview and observation recorded in a checklist format based on the teachers' approach during the Inquiry-Based Learning. The Primary source of data is obtained by the researcher from the teachers personal assessment on the their Work Motivation, Classroom Management and Critical Thinking skills. However, the secondary data in the form of Interview and observation to meet the purpose of triangulation data.

The data of this study will be analyzed using path analysis method, Structural Equation Modeling (SEM) using Partial Least Squares (PLS) approach. According to Hair et al. (2014, p. 12), PLS-SEM consists of two path model elements, which are the inner model or structural model and the outer model or measurement model. There are two steps of PLS-SEM evaluation: outer model assessment and inner model assessment. Henseler et al. (2009, (pp. 298, 303) states that the outer model assessment will assess the reliability and validity of the construct, and then the inner model assessment states the effect between variables. Outer model assessment should be conducted first. Once the outer model is proven to be reliable and valid, the inner model assessment can be conducted.

The structural model assessment evaluates the effect between the variables and the capabilities of the independent variables in explaining the dependent variable. Multicollinearity test would be conducted first to ensure that there is no collinearity issue in the variables. The stages of structural model assessment are as follows: 1) Multicollinearity Test. The collinearity of the variables can be identified by the reciprocal of the tolerance shown by the value of Variance Inflation Factor (VIF) (Hair et al., 2014, p. 125). The VIF value should be lower than 5.00 to ensure that there is no significant level of collinearity issues in the model; 2) Coefficient of Determination Test, represented as the R<sup>2</sup> value which measures the model's predictive accuracy, and 3) Path coefficient analysis for testing of hypothesis.

The reliability and validity of the construct measures are evaluated in measurement model assessment. The measurement model assessments for reflective measurement models assess the convergent validity by deleting the items with factor loading below than 0.50. Then construct validity is assessed by looking at the values of - AVE , above 0.50 and categorized as valid. Discriminant validity is then tested using two methods by: (1) examining the cross loading of the items and (2) examining the Fornell-Larcker criterion. The Fornell-Larcker criterion is used in this study that the discriminant validity is achieved when the square root of AVE of each variable is bigger than the correlation between other variables.

## RESEARCH FINDINGS AND DISCUSSION

**Table 1.** Value of Average Variance Extracted (AVE) & square root of AVE

Variable	AVE	Square root of AVE
Teachers' Competence in IBL	0.637	0.798
Work Motivation	0.654	0.809
Classroom Management	0.623	0.789
Critical Thinking	0.592	0.769

Source: Data analysis 2016

From the results above, the criteria for construct validity for all variables are fulfilled respectively. All the variables have AVE value above 0.500.

**Table 2.** Comparison matrix of square root and square root of AVE

Variables	Classroom Management	Critical Thinking	Work Motivation	Teachers Competence in IBL
Classroom Management	0.789			
Critical Thinking	0.720	0.769		
Teachers' Competence in IBL	0.168	0.029	0.798	
Work Motivation	0.186	0.147	-0.569	0.809

Source: Data analysis, 2016

Based on the table above, it can be concluded that the value of square root of AVE from each variable is higher in comparison to the correlation between variables. Therefore, it can be concluded that this research has fulfilled the requirements of testing discriminant validity.

**Table 3.** Values of Composite Reliability

Variable	Composite Reliability
Teachers' Competence in IBL	0.950
Work Motivation	0.961
Classroom Management	0.892
Critical Thinking Skills	0.878

Source: Data analysis, 2016

From the results shown on the table above, we can observe that the composite reliability values of all the variables are strong, which are more than 0.800 for the respective variables. The values obtained are as follows: Teachers' Competence in IBL (0.950), Work Motivation (0.961), Classroom Management (0.892) and Critical Thinking Skills (0.878). In conclusion, the variable Work Motivation has the highest value of Composite Reliability and the variable Critical Thinking Skills have the lowest value of Composite Reliability.

**Table 4.** The value of R-Squared

Variable	R <sup>2</sup> / R-Squared
Teachers' Competence in IBL	0.416
Critical Thinking	0.022
Classroom Management	0.525

Source: Data analysis, 2016

Based on the table above, it can be stated that work motivation, classroom management and critical thinking skills can explain the variable teachers' competence in IBL by 41.6% (weak predictive accuracy) and the remaining is explained by other factors. Classroom

management can be explained by motivation and critical thinking by 52.5% (moderate predictive accuracy) and the remaining can be explained by other variables. Work Motivation can explain critical Thinking by 0.2% (not significant predictive accuracy) and the remaining can be explained by other variables.

**Table 5.** Results of Multi-Collinearity Test

Variable	VIF value	Result
Work Motivation	1.036	No collinearity
Classroom Management	2.104	No collinearity
Critical Thinking	2.077	No collinearity

Source: Data analysis, 2016

From the data analysis on table 5, it can be concluded that the value of path coefficient is not equal to zero. Therefore, we can state that here is an effect between: 1) the dependent variables and independent variable; and 2) the dependent variables. The results of convergent validity were assessed by looking at the values of loading factor of items. The ones with loading factors more than 0.700 was retained, whereas the other items were disposed. Figure 1 shows the results of the path model of PLS-SEM in accordance to their values of the respective items representing the variables.

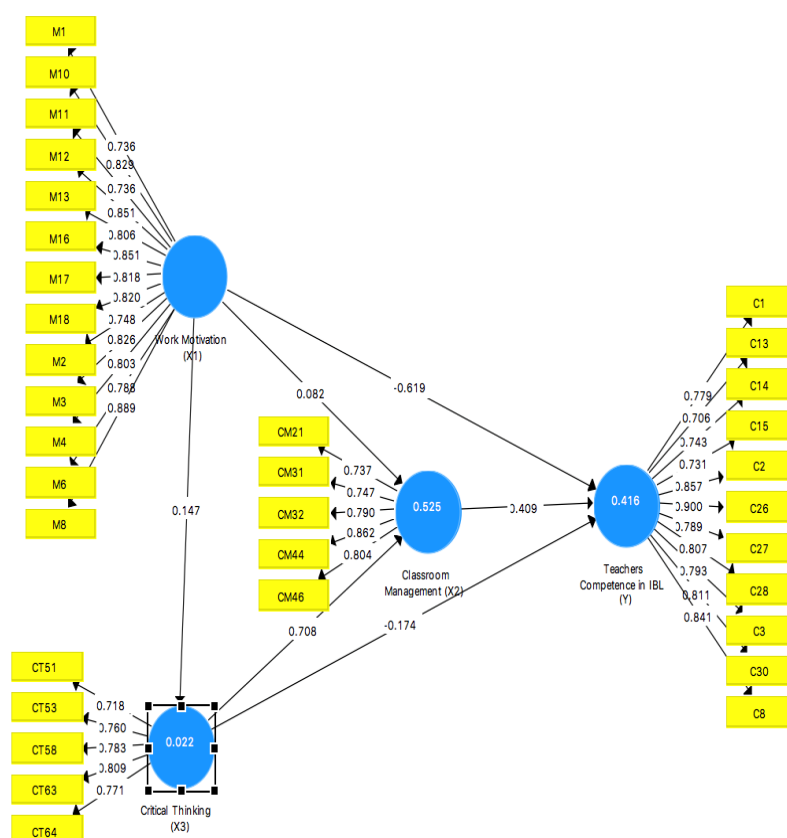


Figure 1.  
Results of the Path Model of PLS-SEM  
Source: Data Analysis 2016

The effect between variables	Path coefficient
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Work Motivation → Teachers' Competence in IBL	-0.619
Classroom → Management Teachers' Competence in IBL	0.409
Critical Thinking skills → Teachers' Competence in IBL	- 0.174
Work Motivation → Classroom Management	0.082
Work Motivation → Critical Thinking	0.147
Critical Thinking → Classroom Management	0.708

**Table 6.** Testing Hypothesis

From the data analysis, it can be concluded that the value of path coefficient has an opposite effect between Work Motivation towards Teachers' Competence (-0.619) and Critical Thinking Skills towards Teachers' Competence (-0.174). However, the value of path coefficients are positive, which states that there is an effect between Classroom Management towards Teachers' Competence (0.409), Work Motivation towards Classroom Management (0.158), Work Motivation towards Critical Thinking Skills (0.825), Classroom Management towards Critical Thinking Skills (0.712).

### ***Discussion***

Based on the analysis and discussion, it is observed that critical thinking skills management has the strongest effect towards teachers' competence in the IBL approach. The indicators, which have a major effect on the teachers' competence, is the effective planning of the content of the subject matter. Teachers guide the students in an effective manner during the transition time from one activity to another. Students are also given the chance to pursue their own interest. These items are based on the dimensions of effective planning, organizing and teacher support which are essential for classroom management.

As for the effect of the dependent variables, it can be stated that work motivation, classroom management, and critical thinking skills are affected by each other. Critical thinking skills has the highest effect towards classroom management as in the IBL approach, teachers need to plan, organize and support students during task orientation. It is most important for teachers to have the ability to manage question and answer sessions, think critically from students' point of view and try to guide students to relate the concepts taught in class to their personal experiences which aims to achieve the goals and objectives of the lesson.

### ***Limitations of Research***

Considering the situation and conditions of this research, this research was done within the boundaries of an international school in Jakarta, focusing mainly on the MYP in IB. This research was studied based on the teachers' Work Motivation, Classroom Management and Critical Thinking Skills towards the teachers' competence of effective implementation of IBL. The respondents involved in this research are the principal and teachers in the MYP. The Inquiry-Based Instruction was applied in the Middle Years Program with teachers teaching various subjects. The Critical Thinking skills discussed used the standard competency of Critical Thinking adapted from the work of Paul and Elder (2005). There were twenty-five standards of Critical Thinking skills as proposed in their work. However, this study focused only on one standard that is the elements of reasoning which is one of the prerequisites of the Inquiry-Based Learning.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

As for teachers work motivation and critical thinking skills towards the teachers' competence towards the implementation in IBL approach, it is observed that there is an opposite effect between the variables. From the data analyzed, as the work motivation of the teacher is high, the teachers are not competent to teach the IBL approach. This may be due to the lack of workshops, trainings which are mainly theoretical and not based on hands on activities. The school should conduct more workshops in which teachers could model the inquiry process and transfer the knowledge to peers. This could enable the teachers to get feedback on their inquiry approach from the colleagues and aware of the limitations of the IBL approach which they implemented. However, the teachers who lack experience in the MYP could also enrich their ideas and learn from the ones who have had longer experiences in the IBL that would increase their competence in IBL.

The teachers need to possess critical thinking abilities to gain competence in the IBL approach. In the data analyzed, there is a opposite effect between critical thinking skills towards teachers' competence in IBL. This may be due that few individuals have critical thinking skills abilities, but not able to transfer the teaching of critical thinking skills to the students in an appropriate manner. Likewise, if the teachers have low critical thinking skills, the teachers' competence is high. This may be due to the students who are already familiar with the previous programs in the IB curriculum, such as the PYP in the previous years. As the IBL was also implemented in the Primary level, they are able to construct their own ideas and meet the goals of the IBL. Here students have the ability to think critically and require less guidance from the teachers.

From the management of school XYZ, more workshops should be held and teachers should be guided towards the IBL approach, which would gain their competence in the IBL. There should be meetings in which teachers teaching the same subjects give in ideas about different approaches of the teaching and learning process. However, the approaches should be relevant and contribute to achieve the goals as every topic is different and therefore requires a variety of methods in the classroom. The school should have a subject coordinator who can enrich the teachers with ideas and hands-on experience to those teachers who have less experience in the IB-MYP, especially in the IBL approach.

Teachers should be able to choose topics related to the Inquiry-Based Learning so that the knowledge can be transferred in an effective manner because IBL approach requires preparation and needs more time allocation in comparison to other methods.

### **Recommendations**

The future research can involve more respondents from different schools implementing the IB-PYP, IB-MYP and IB-DP, which can use the Structural Equation Model. This model is best suited for more number of respondents to test the results of the research design. There can be a comparison of the teachers in different schools depending on the period that particular school has implemented the IB-MYP. The next research can involve other variables, such as communication skills, reflective thinking skills and inquiry skills towards the teachers' competence in IBL. Therefore, it can give a clear picture on what are the major personal attributes that would contribute to the teachers' competence in IBL.

The future research can be a comparison of the attitudes, behavior and perceptions of teachers teaching various programs in the IB curriculum. This can give a picture on which levels are the teachers more competent in the IBL approach.



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