

# Prospective Teachers Input Based on Intelligence Quotient in the Institute of Teacher Training and Education

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**Abstract**—The objective of this study was to describe intelligence quotient (IQ) of prospective teachers in the Institute of Teacher Training and Education. The method used in this study is a quantitative descriptive study method (survey) to describe the conditions that occur in the situation. A total sample of 330 students was from the Faculty of Education, Faculty of Culture & Art, Faculty of Mathematics & Science, and Faculty of Economics. Culture Fair Intelligence Test (CFIT) Scale 3 Form A was used to measure students' intelligence quotient. Based on the research results, it showed that (1) very few prospective teachers are in the smart and very smart category (4.3%), most of them are in the average category (57%), even there are students who are in the lower category (36.3%), and borderline (2.4%); (2) there are very few high school graduates who chose to continue their studies in the Institute of Teacher Training and Education as their first choice; (3) increasing the quantity of input in educational programs in the Institute of Teacher Training and Education must be followed by increasing the quality of input.

**Keywords**—intelligence quotient; institute of teacher training and education; prospective teachers

## I. INTRODUCTION

Teachers are the determining factor of education success [1-3]. Teachers contribution to education is very crucial, such as in the field of learning [4], student test results [5], form a socio-affective class structure [6], class communication and interaction [7]. Some studies showed that teacher contributions remain high, even when the education system and learning approaches are various. The important role of teachers in education can be seen in the 2015-2030 targets of Sustainable Development Goals (SDG) which is declared by the United Nations that said in 2030 all governments will ensure all learners are taught by qualified, professionally trained, motivated and well-supported teachers.

Teachers need to develop their competencies according to the transformation of education effectively [8,9]. In Indonesian, unfortunately, we faced the fact that teachers' competencies are still low. The national average of the 2015 Teacher Competency Test (UKG) for pedagogic and professional competencies is only 53.02, and the pedagogical competence,

the national average is only 48.94, which is below the minimum competency standard (SKM), namely 55 [10].

The low teacher competency test results are an indication of quality problems of output that is produced by the Institute of Teacher Training and Education. The quality of a teacher is certainly strong in relation to intellectual capacity. Intelligence as the ability to process information, perceiving, knowing, reasoning and remembering [11,12]. Most intelligence tests measure performance [12,13]. Intelligence quotient or commonly called IQ is a number obtained from an intelligence test. Intelligence quotient is a term of human intelligence grouping which was first introduced by Alfred Binet, a psychologist from France in the early 20th century [12]. The most dominant intelligence theory in the concept of intelligence is fluid and crystallized intelligence from Cattell-Horn. In addition intelligence quotient, also affects performance when working [14,15].

Intelligence quotient believed as the best predictor of a person's success, therefore it often uses for selections or job placements [16]. For instance, intelligence measurement was used as a method for teacher candidates for quality screening [17].

Although intelligence quotient can predict future leaders, there are other measurements that drive teacher qualifications, such as emotional intelligence [18]. Research findings showed that emotional intelligence has a correlation to burnout [19], life and job satisfaction [20], and affective commitment, continuance commitment and normative commitment [21]. However, there are rare researches that discuss how important intelligence quotient for teachers. On the other hand, both intelligence quotient and emotional intelligence have crucial to human cognitive control processes [22]. For that reason, this research will describe prospective teachers' intelligence quotient in one of the Institute of Teacher Training and Education in Indonesia.

## II. RESEARCH METHODS

### A. Participants

The purpose of this study was to find out the description of the intelligence quotient of prospective teachers from one of the public universities in Indonesia. The research was conducted from July 2016 until November 2017.

The method used in this study is a quantitative descriptive study method (survey). The survey research method aims to describe the conditions that occur in a situation.

The population of this study is all students that studied in the Faculty of Education, Faculty of Culture & Art, Faculty of Mathematics & Science, and Faculty of Economics. There are 330 students who randomly involved in this study as a sample.

TABLE I. NUMBER OF STUDENTS BASED ON THEIR FACULTY

Faculty	Number of Classes	Number of Students
Faculty of Education	22 classes	900 people
Faculty of Culture & Art	21 classes	650 people
Faculty of Mathematics & Science	9 classes	320 people
Faculty of Economics	8 classes	330 people
Total	60 classes	2200 people

TABLE II. NUMBER OF SAMPLES OF PROSPECTIVE TEACHERS

Faculty	Major	Sample
Faculty of Education	Education Management	38
	Non-formal education	39
	Earlychildhood education programs	47
Faculty of Culture & Art	Japanese language	29
	German language	29
Faculty of Mathematics & Science	Physics	36
	Biology	36
	Chemistry	38
Faculty of Economics	Administrative Economics	38
Total		330

### B. Measurements

Culture Fair Intelligence Test (CFIT) Scale 3 Form A was used in this research. CFIT was made by Raymond B. Cattell and A. Karen S. Cattell from University of Illinois, Champaign, the United States in 1949. This test is intended to measure "general ability" or "G factor". According to the intelligence theory proposed by Cattell, CFIT is a test used to measure a person's fluid ability. Fluid ability is a person's cognitive abilities that are hereditary. The advantages of using CFIT are: (1) the measurement can be trusted to know person's general ability in a relatively short time, and (2) can be used classically or in groups of 20 to 30 or more in a class led by a psychologist. CFIT has undergone several revisions since it was first compiled in the 1920s. CFIT is claimed to be a free test used for various individuals from any country and culture in the world [23].

The CFIT test was used to determine the level of the intelligence quotient of prospective teachers in the Institute of Teacher Training and Education. To ensure the validity of IQ

data acquisition, researchers worked with the Guidance and Counseling Services Center in its implementation.

Data were analyzed based on CFIT test scoring guidelines. The classification of intelligence quotient in this study uses a combination of three methods namely Stanford and Shy; Binet, Lewis Terman, and Wechsler with the following classifications:

TABLE III. INTELLIGENCE QUOTIENT CLASSIFICATION

IQ Score	IQ level
70 – 79	Borderline
80 – 89	Below Average
90 – 110	Average
111 – 120	Intelligent
121 – 130	Very clever
> 131	Genius

## III. RESULTS AND DISCUSSION

Based on the results of research that has been done regarding the level of intelligence quotient in 330 students of the Institute of Teacher Training and Education, it is known that most of the intelligence quotient of prospective teachers is in the average category which is 188 students or 57%, as many as 120 students (36.3%) prospective teachers are in the under-average category (IQ80-89), there are 13 prospective teacher students (4%) in the smart category (IQ111-120), and 8 students (2.4%) have intelligence quotient with borderline categories and one (1) student (0.3%) was in the very smart category (IQ121-130). The following is displayed in graphical form.

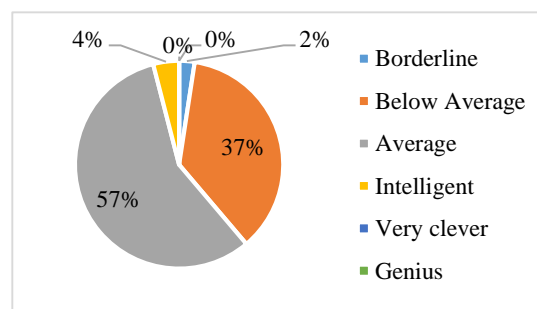


Fig. 1. Picture of IQ of prospective teachers.

Based on figure 1 it is known that only a very few prospective teachers are in the smart and very smart category (4.3%), most of them are in the average category (57%), there are even students who fall under the average category (36.3%), and borderline (2.4%).

From these data, it can be seen that the intelligence quotient of prospective teachers largely does not describe the ideal criteria of a prospective professional teacher who is required to be able to carry out learning based on theory, art, and creativity to be able to stimulate the activities and students' potential. Consequently, prospective teachers are expected to have high intelligence quotient. Teachers can success in the world of education determined by several factors, and the biggest factor among them is the factor of intelligence quotient. This is in line with one of the 17 SDG (Sustainable Development Goals,

2015-2030) targets which are declared by the United Nations in the Asia Africa Forum Discussion. The United Nations stated that in 2030 all governments will ensure all learners will be taught by qualified, professionally-trained, motivated and well-supported teachers. The target states that the education process must be supported by qualified, professionally trained, highly motivated teachers and fully supported.

The intelligence quotient profile of prospective teachers shows the alarming fact that intelligence quotient is in a low category, and borderline becomes the majority. With the results of low intelligence quotient, it is very difficult for the Institute of Teacher Training and Education to produce graduates who have good quality. Dominant factors determining student achievement in school: (1) student characteristics (49%), (2) teachers (30%), and (3) others (21%) [24]. Hattie's study results are strengthened by another research result which showed that IQ had a contribution of 57.7% in the Biology learning achievement in High School students, 65.1% of intelligence quotient is positively related to learning success [25] and as many as 26.6% of student achievement was influenced by intelligence quotient. The three results of the study explain that learning outcomes in certain subjects are related to the intelligence quotient of the student [26].

The Institute of Teacher Training and Education in Indonesia certainly plays an active role in producing qualified and professional prospective teachers, so that they will be able to educate future generations of the nation properly. The intelligence quotient profile of teacher candidate students is contradictory to the high level of university admission selection in the last 5 years. In contrast, prospective teachers at private universities can pass admission selection easily and the competition in them is not so large.

Students as prospective teachers in the category of smart and very smart, even genius is certainly a teacher candidate who is expected in the world of education. Students as prospective teachers are very important to have high intelligence quotient because with intelligence quotient a teacher can analyze the problems he faces wisely looks for aspects of strengths, weaknesses, opportunities, and threats of the problem before finding a solution. Oemar Hamalik revealed that the intelligent teacher has the characteristics (1) has the expertise as a teacher, namely a teacher who understands how to formulate teaching goals, understand the extent to which learning processes are carried out by students, understand the extent of how to deliver lessons to students, being able to choose and use educational aids, able to provide services to individual student differences, be able to provide guidance in helping to overcome students' difficulties and problems, be able to compile and use evaluation tools for teaching and learning abilities, able to carry out collaborative both with parents, always trying to improve the role of the profession and the quality of his profession, and (2) having broad understanding and knowledge. The characteristics of an intelligent teacher who is a teacher who tries to get the best and creative work [27]. Someone with high intelligence quotient has more opportunities to succeed than people with lower intelligence quotient [28].

Countries with good education quality pay serious attention to the quality of input of prospective teachers. Finland makes improving the quality of teachers and principals one of the 3 main agendas in the reform of the education system.

The input conditions as explained above, of course, need to get serious attention, if we hope that teachers have good competence so that they can carry out quality education. The recruitment system is an important component in producing qualified teachers. In the report published by the World Bank mentioned.

A comprehensive framework for high-quality education requires attention to many different steps in the teacher management and development framework. Recruitment into the Institute of Teacher Training and Education institutions is the first step in the career of new teachers, and countries are using an ever wider range of higher-level candidates to recruit candidates for the teaching profession. Higher pay, of course (competitive with other "professions") helps, but many other strategies are also being applied [29,30].

A low intelligence quotient profile may have something to do with the input quality problem in Institute of Teacher Training and Education, especially the low secondary school graduates who come from excellent schools who continue their studies in educational programs.

Policy support is absolutely necessary to generate nationalism's idealism and responsibility so that these superior students are called to be teachers. For this reason, advocacy is in the form of socializing the teaching profession in the right way for This superior student becomes important. In one report published by the written world bank.

Active recruitment campaigns especially (a) among secondary school graduates with the highest achievement levels and, in some countries, "nontraditional candidates" (for example, mid-career professionals seeking a career change); and (b) among the teachers of subjects (usually science and mathematics) and in regions (rural and remote) where shortages of good teachers are often the greatest [29]. One of the conditions attached to the 21st century teaching profession is that students of education programs must come from selected graduates (the cream of the crops) [31].

Along with the seriousness of this superior student recruitment campaign, a scholarship program needs to be provided so that these superior students are interested in continuing their studies in educational programs at the Institute of Teacher Training and Education. This opinion is in line with the recommendations recorded in the world bank report. Financial incentives such as fee waivers, loans, and scholarships, perhaps biased toward underrepresented fields and teachers destined for difficult locations [29].

#### IV. CONCLUSION

Based on the explanation of the results of the research and discussion, some conclusions can be identified as follows:

- Prospective teachers' intelligence quotient are classified into smart and very smart category (4.3%), average

category (57%), under the average category (36.3%), and borderline (2.4%).

- There are very few high school graduates who chose to continue their studies at the Institute of Teacher Training and Education as their first choice. As a result, the quality of students in the education program is not as good as in other fields.
- Increasing the quantity of input into educational programs in the Institute of Teacher Training and Education must be followed by an increase in input quality, such as intelligence screening for high school graduates who apply in the educational program. The screening result can be a major consideration to decide whether they will be accepted or not.

## REFERENCES

- [1] J.O. Adetayo, "Teachers' Factors as Determinants of the Professional Competence of the Nigeria Certificate in Education (NCE) Teachers," *Journal of Education and Practice*, vol. 7, no. 20, pp. 1–11, 2016.
- [2] H. Ates and G.A. Baskan, "The Precautions to be Taken on the Faculties of Education to Improve Teacher Quality and to Increase Employment Opportunity," *Procedia - Social and Behavioral Sciences*, 141, 861–866, 2014.
- [3] A.E. du Plessis, "Effective education: Conceptualising the meaning of out-of-field teaching practices for teachers, teacher quality and school leaders," *International Journal of Educational Research*, vol. 72, pp. 89–102, 2015.
- [4] S.A. Agathangelou, C.Y. Charalambous, and M. Koutselini, "Reconsidering the contribution of teacher knowledge to student learning: Linear or curvilinear effects? Teaching and Teacher Education," vol. 57, pp. 125–138, 2016.
- [5] A. Canales and L. Maldonado, "Teacher quality and student achievement in Chile: Linking teachers' contribution and observable characteristics," *International Journal of Educational Development*, vol. 60, 2018.
- [6] C. Iurea, "Classroom Environment Between Stimulation and Discouragement. Teacher's Contribution to Creating a New Socio-affective Environment Favoring the Teacher-Student Communication," *Procedia - Social and Behavioral Sciences*, vol. 203, pp. 367–373, 2015.
- [7] J.B.H. Park, D.L. Schallert, A.J.Z. Sanders, K.M. Williams, E. Seo, L.T. Yu, and M.C. Knox, "Does it matter if the teacher is there?: A teacher's contribution to emerging patterns of interactions in online classroom discussions," *Computers and Education*, vol. 82, pp. 315–328, 2015.
- [8] A. Bakx, L. Baartman, and T. van Schilt-Mol, "Development and evaluation of a summative assessment program for senior teacher competence," *Studies in Educational Evaluation*, vol. 40, pp. 50–62, 2014.
- [9] T. Prasertcharoensuk, K. Somprach, and T.K. Ngang, "Influence of Teacher Competency Factors and Students' Life Skills on Learning Achievement," *Procedia - Social and Behavioral Sciences*, vol. 186, pp. 566–572, 2015.
- [10] Kementerian Pendidikan dan Kebudayaan, [Online]. Retrieved from: <http://www.kemdikbud.go.id/>
- [11] J.F. Fagan, C.R. Holland, and K. Wheeler, "The prediction, from infancy, of adult IQ and achievement," *Intelligence*, vol. 35, no. 3, 225–231, 2007.
- [12] V. Yesikar, S. Guleri, S. Dixit, R. Rokade, and S. Parmar, "Intelligence quotient analysis and its association with academic performance of medical students," *International Journal of Community Medicine Public Health*, vol. 2, no. 3, pp. 275–281, 2015.
- [13] F. Cury, D. Da Fonseca, I. Zahn, and A. Elliot, "Implicit theories and IQ test performance: A sequential mediational analysis," *Journal of Experimental Social Psychology*, vol. 44, no. 3, pp. 783–791, 2008.
- [14] K. Richardson, and S.H. Norgate, "Does IQ measure ability for complex cognition?," *Theory and Psychology*, vol. 24, no. 6, pp. 795–812, 2014.
- [15] K. Richardson, and S.H. Norgate, "Does IQ Really Predict Job Performance?" *Applied Developmental Science*, vol. 19, no. 3, pp. 153–169, 2015.
- [16] S. Jerslina and K. Devaki, "Emotional intelligence of prospective teachers," *International Journal of Applied Research*, vol. 2, no. 7, pp. 321–325, 2016.
- [17] R.M. Wiebers, "Measuring Effectiveness in Teacher Candidates" The University of South Dakota, 2014.
- [18] C. Brase, *Emotional Intelligence: The Zeitgeist in Teacher Recruitment*. Brandman University, 2016.
- [19] S. Mérida-López and N. Extremera, "Emotional intelligence and teacher burnout: A systematic review," *International Journal of Educational Research*, vol. 85, pp. 121–130, 2017.
- [20] A.A. Ignat and O. Clipa, "Teachers' satisfaction with life, job satisfaction and their emotional intelligence," *Procedia - Social and Behavioral Sciences*, 33, 498–502, 2012.
- [21] M.A. Sharfras Navas and M. Vijayakumar, "Emotional Intelligence: A Review of Emotional Intelligence Effect on Organizational Commitment, Job Satisfaction and Job Stress," *International Journal of Advanced Scientific Research & Development (IJASRD)*, vol. 5, no. 6, pp. 01, 2018.
- [22] P. Checa, and P. Fernández-Berrocal, "The Role of Intelligence Quotient and Emotional Intelligence in Cognitive Control Processes," *Frontiers in Psychology*, vol. 6, 2015.
- [23] H. Sriyono and W. Wahyudin, "Peran Tingkat Intelegensi Dan Motivasi Belajar Dalam Meningkatkan Prestasi Belajar Ekonomi Di Sma Negeri Gugus 01 Kabupaten Tangerang," *Research And Development Journal Of Education*, vol. 3, no.1, 2016.
- [24] J. Hattie, *Teachers Make a Difference, What is the research evidence?*, 2003.
- [25] S. Effendi, Hubungan tingkat kecerdasan emosional dan intelektual dengan keberhasilan belajar. *Jurnal Aksioma Ad-Diniyyah*, vol. I, no. 2, pp. 1–22, 2013.
- [26] D. Nurhidayah, "Pengaruh Kecerdasan Intelektual dan Kecerdasan Emosional Terhadap Prestasi Siswa Kelas XI Akuntansi Pada Mata Pelajaran Akuntansi di SMK Negeri 1 Surabaya," *Jurnal Pendidikan Ekonomi*, vol. IV, no. 1, p. 58, 2011.
- [27] C. Wijaya, *Kemampuan Dasar Guru dalam Proses Belajar Mengajar*. Bandung: Remaja Rosdakarya, 1994.
- [28] A. Woolfolk, *Educational psychology*, 2016.
- [29] M.C. Chang, S. Shaeffer, S. Al-Sammarrai, A.B. Ragatz, J. de Ree, and R. Stevenson, *Teacher reform in Indonesia*, 2014.
- [30] L. Ciolan, "Better Teachers for Better Schools. The Position and Role of Higher Education in the Training Process," *Procedia - Social and Behavioral Sciences*, vol. 76, pp. 34–38, 2013.
- [31] H.A. Tilaar, *Guru Kita: Artis Karakter & Kecerdasan*. Yogyakarta: Lamamera, 2016.