

## DEVELOPING THE TEACHER'S SOCIAL COMPETENCY ASSESSMENT INSTRUMENTS IN INDUSTRIAL REVOLUTION 4.0 ERA

Anonymous

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### Abstract

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The purpose of the study was to develop instruments for measuring the social competence of teacher candidates in the Industrial Revolution 4.0 era. The instrument was developed by referring to Indonesia Constitution Number 14 of 2005 concerning Teachers and Lecturers, Ministry of National Education (MONE) Regulation Number 16 of 2007, with the strengthened special competence of teacher' candidates in the I.R. 4.0 era, were the top ten relevant skills. The instrument development was carried out with the following steps: (1) developing instrument constructs, (2) developing instrument blueprint, (3) instrument item writing, (4) instrument review, (5) instrument revision, (6) limited testing of instruments. The limited instrument testing was carried out with as many as 107 test subjects for 6th semester undergraduate education at UNY, consisting of three study programs, namely Mathematics Education, Indonesian Language Education, and English Language Education study programs. Data analysis to determine content validity was carried out based on Aiken's V coefficient, construct validity analysis was carried out with CFA, and reliability estimates were based on the Cronbach Alpha formula. The results of the analysis of the content validity of 30 instruments by seven experts, obtained the Aiken V index between 0.61 - 0.93, with 29 items valid, and one item invalid. The results of construct validity analysis with exploratory factor analysis (EFA) showed 25 valid items and five invalid items, with a KMO value of 0.504, while the significance of the Bartlett's Test was  $p = 0,000$ . Meanwhile, confirmatory factor analysis showed a fit model, with Chi-Square value = 290.35;  $p = 0.18$ ; RMSEA = 0.00; GFI = 0.83; SRMR = 0.083; AGFI = 0.80; CFI = 0.86; RFI = 0.28. The reliability results show that the Cronbach Alpha coefficient is 0.40. This results shows that the social competency assessment instruments for teachers' candidates in the I.R. 4.0 era have been developed is feasible to use, with some revisions.

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*Keywords:* Instruments, social competence, teacher's candidates, the industrial revolution 4.0 era

### Introduction

The quality of education plays an important role in the life of a nation. Through education, humans can find breakthroughs to make life easier. Until now, the quality of education in Indonesia was still relatively low. The results of the Trend in International Mathematics and Science Study (TIMSS) show students' abilities are still low (Scientific Literacy, October 24, 2014). In addition, a major challenge also faced by Indonesia is the presence of the Industrial Revolution 4.0 (I.R. 4.0) era where all machines were connected with others, relying on cyber physical systems that will change the way humans live, work, and communicate radically. Work that was originally done manually in relying on human

labor has been replaced by machinery and information technology. This change has an impact on the process of education, but the main key was the need to improve the quality of learning carried out by teachers in schools.

At present, the quality of education in Indonesia still needs improvement. The results of the 2015 PISA (Program of International for Student Assessment) also showed that Indonesia ranked 63 out of 70 countries evaluated (OECD, 2016). Prita's research (2017) about the impact of teacher's certification in Indonesia after 10 years of certification did not show an increase in performance and motivation, so the teacher certification allowance hardly affected their performance. These two facts indicate the need to prepare a qualified teachers, beginning with the implementation of the right selection, so that they can measure their competence validly.

Meanwhile, Jones (2018) explains that education in the 21<sup>st</sup> century prioritizes an individual and social development, as well as adequate skills complemented by critical thinking, creative, adaptability and entrepreneurial abilities. This is in line with the opinion of the World Economic Forum / WEF (Gleason, 2018) which explains "the top ten skills that will be needed in the order of priority by employers by 2020 are: complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility ". For this reason, the development of four competencies for teacher candidates must be imbued with top ten skills.

These conditions raise challenges to improve the ability of professional teachers who must have good personalities, master teaching materials, be skilled in using various media and teaching methods, and be able to communicate well. In order for the Teacher Education Institution (LPTK) has graduates capable of producing a qualified teachers, they need to master 4 competencies, namely personality competence, social competence, pedagogical competence, professional competence, and special competencies needed in the I.R 4.0 era. LPTK graduates must also be able to compete with teachers from other countries, fellow ASEAN countries and be able to organize creative, innovative, and dignified learning. As a breakthrough in improving the quality of teacher candidates for LPTK graduates, it is necessary to develop a model for evaluating the competency of teacher candidates in the I.R. 4.0 era. This evaluation model must be able to describe the level of competency of teachers' candidates graduating from LPTK and describe sub competencies that have not been mastered when viewed from the teacher competencies needed in I.R. 4.0 era.

The purpose of this study was to develop a social competency assessment instrument as part of the development of a competency evaluation model for teachers' candidates in the I.R. 4.0 era, that is accurate and reliable and based on IT. It is hoped that this developed model was able to produce a profile of teachers candidates' social competencies quickly, accurately, and reliably, and was able to describe their shortcomings when viewed from the competencies of teachers candidates in the I.R. 4.0 era. Furthermore, the results of the assessment of the teacher's social competency can be used to evaluate and improving teacher preparation programs in LPTK.

#### **Competency of Teachers Candidates in the I.R. 4.0 Era**

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Teacher competence is a set of knowledge, skills and behavior that must be possessed, internalized, and mastered by the teacher in carrying out his professional duties. According to Indonesia Constitution No. 14/2005 on Teachers and Lecturers, teacher competencies must include pedagogical competencies, professional competencies, personality competencies and social competencies obtained through professional education. However, related to the presence of the I.R. 4.0 era, the teacher's competence must be dynamic, developing according to the development of science and technology, especially in the Industrial Revolution (R.I) 4.0 era.

Specifically, Popkova, Ragulina & Bogoviz, (2018) explained that the industrial revolution 4.0 era was a trend related to the "digitalization" of the economy and society, including the development of smart services, smart data, cloud technology, digital networks, digital science, digital education, and the environment digital for life. Meanwhile Ghorbani, Jafari, & Sharifian, (2018) explained "the findings obtained from two qualitative and quantitative sections of the present study showed that the teachers of the 21<sup>st</sup> century should educate students in a way that they could learn how to be in today" . The same thing was also conveyed by Van Hong, Tuyen, & Luong (2018) who revealed that 21<sup>st</sup> century teachers are required to have at least three special competencies, one of which is the ability to apply information technology in learning.

The four competencies set out in Indonesia Constitution No. 14 of 2005, which is further elaborated into Ministry of National Education (MONE) Regulation number 16 of 2007 needs to be strengthened and supported by the mastery of information technology so that each competency can be applied by maximizing media and technology according to the demands of the industrial revolution 4.0 era. Another thing that needs to be considered by a

professional teacher is an understanding of the development and characteristics of the students. This is consistent with the results of research conducted by La Velle, & Flores (2018) that professional teachers should not assume if the development of students' knowledge from year to year remains the same because this assumption is only based on empirical data from the past, without directly seeing the development of participants students today are very influenced by the development of information technology so rapidly.

In the industrial revolution 4.0 era and the current era of disruption, in addition to the four main competencies, teacher candidates are also required to master 10 I.R. 4.0 skills as conveyed by Gleason (2018) in the word economic forum, namely, complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. Therefore, the scope of competency of the teachers candidates in the I.R. 4.0 era. not only covers four teacher competencies as stipulated in Indonesian Constitution No. 14 of 2005 on Teachers and Lecturers, but must be supported by specific competencies, which are included in the top ten skills that will be needed in the order of priority by employers by 2020. This concept is referred to in developing instruments to measure the competency of teachers candidates in the I.R. 4.0 Era.

On the other hand, evaluation is a systematic activity to identify, clarify and apply criteria to determine the success of the program (Fitzpatrick, Sanders, and Worthen, 2011). In similar terms, Merten (2010) explained that evaluation is a systematic and objective effort to assess the development and achievement of a program's goals. This is in accordance with the opinion of Djemari Mardapi (2018), who revealed that each evaluation requires information on the results of the assessment and measurement results. Measurements can be made through exams, to find out student learning outcomes that reflect the teaching success of teachers. Sttigins (2012) explains that assessment is the process of gathering information about student learning to improve learning.

Based on some of the opinions it can be concluded that the notion of evaluation in the field of education is a process of assessing the achievement of educational goals and providing input for the improvement of educational programs in which includes the process of collecting, processing, and analyzing data carried out systematically and scientifically to see the extent of the program has achieved its objectives based on predetermined criteria. Teacher competency evaluation model developed has two main advantages seen from its usefulness, first, it is useful for selecting professional teacher candidates needed in the I.R. 4.0 era, and second, are useful as evaluation material for mapping the quality of Teacher

Education Institution (LPTK) which produce the teacher's candidates in accordance with Indonesian Constitution No. 14 of 2005 concerning Teachers and Lecturers.

The results of Chai, Hwee Ling Koh & Teo's research (2019); Tican & Deniz (2019), Ismail, Husin & Khalid (2018), Anagün (2018), Ajmain, Mahpuz, Rahman & Mohamad (2019), Chou, Shen, Hsiao & Shen, (2018), Van Hong, Tuyen & Luong (2018) shows that the importance of increasing teacher professionalism in learning in various fields by utilizing technology which is emphasized in the pedagogical aspects. These results reinforced this research regarding the importance of developing teacher learning competency evaluation models according to the demands of the I.R. 4.0 era. The evaluation model developed has advantages not only limited to learning competencies but is more comprehensive which includes four competencies namely pedagogical competencies, professional competencies, personality competencies, and social competencies that are adapted to the era.

The four competencies have an important role and complement each other. In this case, the teacher's social competence is also very important in addition to the other three competencies. This is in accordance with the opinion of Friedlander et al. (2018), which states that the teacher's task is to teach students while still paying attention to the balance of the development of knowledge in schools with the development of students' social attitudes in the community. Meanwhile, the research of Arisman, Getter and Nuryamin (2018) shows that the personality and professional competence of teachers is also a very important competency, which must be possessed by a teacher's candidates. As a center of education, a teacher must be equipped with professionalism, have insight into the subject matter taught, and have an personality that can be emulated by students.

Social competence is the ability of teachers to communicate and socialize effectively to students, education personnel, parents, and surrounding communities (Indonesia Constitution No. 14 of 2005; MONE Regulation No. 16 of 2007). Indicators of teacher social competence, including: (1) being inclusive, acting objectively, and not discriminating because of consideration of gender, religion, race, physical condition, family background, and family social status; (2) communicating effectively, empathically, and politely with fellow educators, educational staff, parents and the community; (3) adaptation to places of work in all regions of the Republic of Indonesia which have socio-cultural diversity, and (4) communicate both verbally and in writing.

To that end, the development of instruments to measure the social competence of teachers' candidates in the I.R. 4.0 era, refers to the four indicators supported by the demands of teacher competence in the I.R. 4.0 era, which is reflected by the top ten skills.

## Method

Research on developing teacher social competency assessment instruments in the I.R.4.0 era was a part of research into the development of competency evaluation model of teachers' candidates in the Industrial Revolution 4.0 (I.R. 4.0) era, which will be carried out for 3 years. The focus of this research is developing a instruments to measure the social competence of teachers' candidates based on MONE Regulation No. 16 of 2007, reinforced by the top ten skills competency indicators demanded in the I.R. 4.0 era. The developing of the instrument was carried out the following steps: (1) developing the instrument construct, (2) developing the instrument blueprint, (3) writing the instrument items, (4) reviewing the instrument items, (5) revising the instruments based on the results of the items review, and (6) limited testing of instruments that have been developed.

The development of the instrument construct refers to the indicators of teacher social competences in accordance with MONE Regulation 16 of 2007, reinforced by specific competencies, namely the top ten skills needed and prioritized by the workforce (including teachers) towards 2020 formulated by Gleason (2018). Therefore, the construct of social competence of teachers' candidates in the I.R. 4.0 Era, will reflect the four indicators of teacher social competence as stated in Indonesian Constitution No. 14 of 2005 concerning Teachers and Lecturers and MONE Regulation No. 16 of 2007, with the relevant aspects of the top ten skills. Instrument construction to measure the social competence of teachers' candidates in the I.R. 4.0 era which includes four dimensions and is broken down into 15 indicators. The four dimensions were: first, being inclusive, acting objectively, and not discriminating because of consideration of gender, religion, race, physical condition, family background, and family social status; the second, communicating effectively, empathically, and politely with fellow educators, educational staff, parents and the community; the third, adaptation to places of duty throughout the territory of the Republic of Indonesia which has socio-cultural diversity; and the fourth, communicating both orally and in writing.

In accordance with the instrument development stages above, then after the instrument was prepared, a study was conducted involving measurement experts. This expert review was carried out to establish content validity, which involved seven experts. The results of the next review analyzed to calculate the V Aiken coefficient, which reflects the validity of the instrument. Meanwhile, based on the results of the study the instrument was revised according to the suggestions from expert reviewers. At a later stage, the instrument was tested limited to the teachers' candidates. As for the test subjects in this study were students in the

final semester (semester 6) of educational study programs at Yogyakarta State University for three study programs, namely Mathematics Education, Indonesian Language Education, and English Language Education. The number of limited trial samples is 107 students.

Instrument for evaluating social competence of teachers' candidates in the I.R. 4.0 era used in this limited trial is in the paper and pencil, using inventory, graded response or with a polythomus scale. Instrument validation includes content validity carried out through expert analysis, and construct validity was done by exploratory and confirmatory factor analysis (EFA and CFA), while reliability estimation uses the Alpha-Cronbach formula. Data analysis of the results of expert studies was performed by calculating the V Aiken coefficient, while the results of the construct validity analysis were carried out by the EFA and CFA.

### Findings and Discussion

The validity of the instrument was tested in contents and extracts. The validity of the content was tested through a study involving seven experts and analyzed using the Aiken's formula. Retnawati (2016, p.19), states that the item can be declared valid, if it has a coefficient value of Aiken's V in medium category, which is a minimum of 0.60. Items that have Aiken's V coefficient  $< 0.60$  are considered invalid. The results of the analysis of the content validity of 30 instruments by seven experts, obtained the Aiken V index between 0.61 - 0.93. Based on the calculation results of the Aiken V coefficient obtained 29 items declared valid (has an Aiken coefficient  $V > 0.60$ ), and one item is declared invalid because it has an Aiken coefficient  $V < 0.60$ .

The validity of the extract was tested through factor analysis, both exploratory and confirmatory. Wagiran (2015, p. 300) said that exploratory factor analysis was conducted to ascertain whether certain items supported the factors and these factors supported the variables. The criteria for exploratory factor analysis according to Wagiran (2015, p. 303) are as follows:

Table 1. Criterion for Exploratory Factor Analysis

Criteria	Value
Keyser Mayer Oikin (KMO)	$> 0,5$
Barlett's Test of Sphericity	$> 0,05$
Anti image correlation MSA	$> 0,5$
Eigen value	$> 1,0$
Rotated Factors	$> 0,4$

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The results of construct validity analysis with exploratory factor analysis (EFA) showed 25 valid items and five invalid items, with a KMO value of 0.504, while the significance of the Bartlett's Test was  $p = 0,000$ . For valid instrument items, further tests are conducted, namely confirmatory factor analysis. Hendryadi & Suryani (2014, p. 63) states that the confirmatory model factor analysis aims to see whether the developed model has a goodness of fit or not. The conformity parameters of the confirmatory factor analysis according to Hendryadi & Suryani (2014, pp. 18-19) are presented in Table 2.

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Table 2. Parameter of Model Fit in Confirmatory Factor Analysis

Criteria	Value
Chi Square	P value > 0,05
Root Means Square Error of Approximation (RSMEA)	RSMEA = 0,08
Goodness Of Fit Index ( GFI)	GFI = 0,09
Standardized Root Mean Square Residual (SRMR)	SRMR = 0,05
Adjusted Goodness of Fit Index (AGFI)	AGFI = 0,90
Comparative Fit Index (CFI)	CFI = 0,90
Incremental For Index ( RFI)	RFI = 0,90

In the next stage, the reliability of the instrument that has been declared valid is estimated. The criteria for determining instrument reliability are based on Alpha coefficients > 0.5 (Wagiran, 2015). Reliability of instrument extraction can be obtained from the results of the confirmatory factor analysis calculation using the formula Construct Reliability (CR) and Variance Extract (VE). Hendryadi & Suryani (2014, p. 17) mentioned that the recommended CR reliability value is more than 0.7 while the recommended VE value is greater than 0.5. The formula for calculating the reliability of extracts according to Hendryadi & Suryani (2014, pp. 17-18) is as follows:

*Construct Reliability*

$$= \frac{(\sum \text{Standardized loading})^2}{(\sum \text{Standardized loading})^2 + (\sum \text{Measurement Error})}$$

*Variance Extract*

$$= \frac{\sum \text{Standardized loading}^2}{\sum \text{Standardized loading}^2 + (\sum \text{Measurement Error})}$$

The results of confirmatory factor analysis showed a fit model, with Chi-Square value = 290.35;  $p = 0.18$ ; RMSEA = 0.00; GFI = 0.83; SRMR = 0.083; AGFI = 0.80; CFI = 0.86; RFI = 0.28. The reliability results show that the Cronbach Alpha coefficient is 0.40. This results shows that the social competency assessment instruments for teachers' candidates in the I.R. 4.0 era have been developed is feasible to use, with some revisions.

Based on the results obtained based on exploratory factor analysis and confirmatory factor analysis, it can be concluded that the assessment instrument for social competency of teachers candidates have 25 valid items. Of the 25 items that have been declared valid are analyzed by confirmatory factor analysis, and the model is declared fit. Furthermore, the results of the reliability analysis of the instrument with the Cronbach Alpha formula, obtained a reliability coefficient of 0.40 (medium category).

The development of social competency assessment instruments for prospective teachers in the I.R 4.0 era produced a set of valid instruments, both in terms of content validity and construct validity. However, the instrument that has been developed has a fairly low reliability, which is only 0.40. The low level of reliability is most likely due to two factors, namely aspects of sampling factors or number of items, and changes in test participant performance. The first aspect, namely the number of items in this case only 25 items. In this case, the number of items is directly proportional to the reliability of an instrument. If the number of grains increases, the instrument reliability will be higher. The second factor is the inconsistent performance of the test taker, which in this case can be caused by the guessing aspect. This is common if the test is too difficult, so test takers will tend to guess the answer.

The instrument developed was an instrument to assess the social competence of prospective teachers in the I.R 4.0 era. Social competence is one of the most important teacher competencies, because it is closely related to the teacher's task as an educator, and an example for students. In this case, Rosyada (2018) states that teachers are a unique profession because there are so many competencies that they must master in carrying out their duties as educators in order to prepare future generations.

One of the competencies that must be possessed by every teacher is social competence, namely the ability to manage social relationships that require a variety of skills, skills and capacities in solving problems that occur in interpersonal relationships (Boucher, 2012). The significance of social competence for teachers can be felt in many social contexts. One of them is with school stakeholders, including school customers, users of school graduates, and community leaders who are very influential in the process of school progress. Significance is

also felt with their colleagues in school and students whose achievements are in the hands of the teacher himself.

### Conclusion

Based on the description of the results above, it can be concluded: (1) the instrument for evaluating the social competence of prospective teachers in the I.R. era. 4.0 that has been developed is valid both from the aspect of content validity and construct validity, and (2) the reliability of social competency assessment instruments for prospective teachers in the I.R. era. 4.0 that has been developed has low reliability. For this reason, this instrument still needs improvement, especially by increasing the number of instrument items, and improving the instrument's sentence construct, thereby minimizing the guessing factor.

### References

- Ajmain, M. T., Mahpuz, A. N. A., Rahman, S. N. H. A., & Mohamad, A. M. (2019). Industrial Revolution 4.0: Innovation and Challenges of Islamic Education Teachers in Teaching. *BITARA International Journal of Civilizational Studies and Human Sciences*, 2(1), 38-47.
- Arisman, A., Getteng, A. R., & Nuryamin, N. (2018). Pengaruh kompetensi kepribadian guru terhadap motivasi belajar peserta didik MTSn 2 Bone Kabupaten Bone. *Jurnal Dirkursus Islam* 6(3), 418-443
- Boucher. (2012). *Social Competence Education for Pre-Service Teachers*. California State University: Sacramento.
- Chai, C. S., Hwee Ling Koh, J., & Teo, Y. H. (2019). Enhancing and modeling teachers' design beliefs and efficacy of technological pedagogical content knowledge for 21st century quality learning. *Journal of Educational Computing Research*, 57(2), 360-384.
- Chou, C. M., Shen, C. H., Hsiao, H. C., & Shen, T. C. (2018). Industry 4.0 Manpower and Its Teaching Connotation in Technical and Vocational Education: Adjust 107 Curriculum Reform. *International Journal of Psychology and Educational Studies*, 5(1), 9-14.
- Djemari, M. (2018). *Peran evaluasi dalam meningkatkan kualitas pendidikan kejuruan*. Pidato Pelepasan Guru Besar Universitas Negeri Yogyakarta. Yogyakarta: tidak diterbitkan.
- Fitzpatrick, J.L., Sanders, J.R., & Worthen B.R. (2011). *Program evaluation: alternative approach and practical guidelines*. New York: Pearson Education. Inc.

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Add references from reputable journals in the past 5 years

- Friedlander, E. W., Arshan, N., Zhou, S., & Goldenberg, C. (2018). Life wide or school-only learning: approaches to addressing the developing world's learning crisis. *American Educational Research Journal*, 0002831218792841.
- Ghorbani, S., Jafari, S. E. M., & Sharifian, F. (2018). Learning to be: Teachers' competences and practical solutions: A step towards sustainable development. *Journal of Teacher Education for Sustainability*, 20(1), 20-45.
- Gleason, N.W. (Ed) (2018). *Higher education in the era of the fourth industrial revolution*. Singapore: Springer Published.
- Hendryadi, & Suryani. (2014). *Structural equation modeling dengan lisrel 8.80. Pedoman untuk pemula*. Yogyakarta: Kaukaba Dipantara.
- Ismail, S. N., Don, Y., Husin, F., & Khalid, R. (2018). Instructional Leadership and Teachers' Functional Competency across the 21st Century Learning. *International Journal of Instruction*, 11(3), 135-152
- Jones, Anne. (2018). *Vocational Education for the Twenty-First Century*. The University of Melbourne
- Kartowagiran, B. (2011). Kinerja guru profesional (Guru pasca sertifikasi). *Jurnal Cakrawala Pendidikan*, 3(3).
- Kartowagiran, B., & Jaedun, A. (2016). Model asesmen autentik untuk menilai hasil belajar siswa sekolah menengah pertama (SMP): Implementasi asesmen autentik di SMP. *Jurnal penelitian dan evaluasi pendidikan*, 20(2), 131-141.
- Kartowagiran, B. (2016). Revitalisasi Sertifikasi Guru Untuk Mewujudkan Tenaga Kependidikan Profesional.
- La Velle, L., & Flores, M. A. (2018). Perspectives on evidence-based knowledge for teachers: acquisition, mobilization and utilization. *Journal of Education for Teaching*, 44(5), 524-538.
- Mertens, D. M. (2010). Social transformation and evaluation. *Evaluation Journal of Australasia*, 10(2), 3-10.
- OECD. (2016). *PISA 2015 result in focus*. German: OECD Publishing.
- Popkova, E.G., Ragulina, Y.V., & Bogovic, A.V. (Eds) (2018). *Industry 4.0: Industrial revolution of the 21<sup>st</sup> Century*. Switzerland: Springer International Publishing
- Prita Kusumawadhani. (2017). Does teacher certification program lead to better quality teachers? Evidence from Indonesia. *Education Economic Journal*. Vol. 25 Issue 6, 2017. Pg. 590-618
- Republik Indonesia (2005). Undang-undang Nomor 14 Tahun 2005, tentang Guru dan Dosen. Jakarta: Mensekab R.I.

- Republik Indonesia. Peraturan Menteri Pendidikan Nasional Nomor 16 Tahun 2007, tentang Standar Kualifikasi Akademik dan Kompetensi Guru. Jakarta: Sesjen Dikdasmen.
- Scientific Literacy. (Oktober 24, 2014). *Survei internasional TIMSS (Trends In International Mathematics and Science Study)*.
- Stigin, R. & Chapuis, J. (2012). *Introduction to student involved assessment for learning, 2nd edition*. Boston: Addison Wesley.
- Sugiyanto, S., Kartowagiran, B., & Jailani, J. (2015). Pengembangan Model Evaluasi Proses Pembelajaran Matematika Di SMP Berdasarkan Kurikulum 2013. *Jurnal Penelitian dan Evaluasi Pendidikan*, 19 (1), 82-95.
- Tican, C., & Deniz, S. (2019). Pre-service Teachers' Opinions about the Use of 21st Century Learner and 21st Century Teacher Skills. *European Journal of Educational Research*, 8(1), 181-197.
- Van Hong, B., Tuyen, T., & Luong, N. T. (2018). Teaching Capacity of Technology Teachers: Applying in the Training Program of Technology Teacher in Vietnam. *American Journal of Educational Research*, 6(12), 1662-1667.
- Wagiran. (2015). *Metodologi penelitian pendidikan*. Yogyakarta: Budi Utama.

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### Abstract

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### Introduction

The quality of education plays an important role in the life of a nation. Through education, humans can find breakthroughs to make life easier. Until now, the quality of education in Indonesia was still relatively low. The results of the Trend in International Mathematics and Science Study (TIMSS) show students' abilities are still low (Scientific Literacy, October 24, 2014). In addition, a major challenge also faced by Indonesia is the presence of the Industrial Revolution 4.0

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At present, the quality of education in Indonesia still needs improvement. The results of the 2015 PISA (Program of International for Student Assessment) also showed that Indonesia ranked 63 out of 70 countries evaluated (OECD, 2016). Kusumawardhani's research (2017) about the impact of teacher's certification in Indonesia after 10 years of certification did not show an increase in performance and motivation, so the teacher certification allowance hardly affected their performance. These two facts indicate the need to prepare a qualified teachers, beginning with the implementation of the right selection, so that they can measure their competence validly.

Meanwhile, Jones (2018) explains that education in the 21st century prioritizes an individual and social development, as well as adequate skills complemented by critical thinking, creative, adaptability and entrepreneurial abilities. This is in line with the opinion of the World Economic Forum / WEF (Gleason, 2018) which explains "the top ten skills that will be needed in the order of priority by employers by 2020 are: complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility ". For this reason, the development of four competencies for teacher candidates must be imbued with top ten skills.

These conditions raise challenges to improve the ability of professional teachers who must have good personalities, master teaching materials, be skilled in using various media and teaching methods, and be able to communicate well. In order for the Teacher Education Institution (LPTK) has graduates capable of producing a qualified teachers, they need to master 4 competencies, namely personality competence, social competence, pedagogical competence, professional competence, and special competencies

needed in the I.R 4.0 era. LPTK graduates must also be able to compete with teachers from other countries, fellow ASEAN countries and be able to organize creative, innovative, and dignified learning. As a breakthrough in improving the quality of teacher candidates for LPTK graduates, it is necessary to develop a model for evaluating the competency of teacher candidates in the I.R. 4.0 era. This evaluation model must be able to describe the level of competency of teachers' candidates graduating from LPTK and describe sub competencies that have not been mastered when viewed from the teacher competencies needed in I.R. 4.0 era.

The purpose of this study was to develop a social competency assessment instrument as part of the development of a competency evaluation model for teachers' candidates in the I.R. 4.0 era, that is accurate and reliable and based on IT. It is hoped that this developed model was able to produce a profile of teachers candidates' social competencies quickly, accurately, and reliably, and was able to describe their shortcomings when viewed from the competencies of teachers candidates in the I.R. 4.0 era. Furthermore, the results of the assessment of the teacher's social competency can be used to evaluate and improving teacher preparation programs in LPTK.

#### **Competency of Teachers Candidates in the I.R. 4.0 Era**

Teacher competence is a set of knowledge, skills and behavior that must be possessed, internalized, and mastered by the teacher in carrying out his professional duties. According to Indonesia Constitution No. 14/2005 on Teachers and Lecturers, teacher competencies must include pedagogical competencies, professional competencies, personality competencies and social competencies obtained through professional education. However, related to the presence of the I.R. 4.0 era, the teacher's competence must be dynamic, developing according to the development

of science and technology, especially in the Industrial Revolution (R.I) 4.0 era.

Specifically, Popkova, Ragulina & Bogoviz, (2018) explained that the industrial revolution 4.0 era was a trend related to the "digitalization" of the economy and society, including the development of smart services, smart data, cloud technology, digital networks, digital science, digital education, and the environment digital for life. Meanwhile Ghorbani, Jafari, & Sharifian, (2018) explained "the findings obtained from two qualitative and quantitative sections of the present study showed that the teachers of the 21st century should educate students in a way that they could learn how to be in today" . The same thing was also conveyed by Van Hong, Tuyen, & Luong (2018) who revealed that 21st century teachers are required to have at least three special competencies, one of which is the ability to apply information technology in learning.

The four competencies set out in Indonesia Constitution No. 14 of 2005, which is further elaborated into Ministry of National Education (MONE) Regulation number 16 of 2007 needs to be strengthened and supported by the mastery of information technology so that each competency can be applied by maximizing media and technology according to the demands of the industrial revolution 4.0 era. Another thing that needs to be considered by a professional teacher is an understanding of the development and characteristics of the students. This is consistent with the results of research conducted by La Velle, & Flores (2018) that professional teachers should not assume if the development of students' knowledge from year to year remains the same because this assumption is only based on empirical data from the past, without directly seeing the development of participants students today are very influenced by the development of information technology so rapidly.

In the industrial revolution 4.0 era and the current era of disruption, in addition to the four main competencies, teacher candidates are also required to master 10 I.R. 4.0 skills as conveyed by Gleason (2018) in the word economic forum, namely, complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. Therefore, the scope of competency of the teachers candidates in the I.R. 4.0 era. not only covers four teacher competencies as stipulated in Indonesian Constitution No. 14 of 2005 on Teachers and Lecturers, but must be supported by specific competencies, which are included in the top ten skills that will be needed in the order of priority by employers by 2020. This concept is referred to in developing instruments to measure the competency of teachers candidates in the I.R. 4.0 Era.

On the other hand, evaluation is a systematic activity to identify, clarify and apply criteria to determine the success of the program (Fitzpatrick, Sanders, and Worthen, 2011). In similar terms, Merten (2010) explained that evaluation is a systematic and objective effort to assess the development and achievement of a program's goals. This is in accordance with the opinion of Mardapi (2018), who revealed that each evaluation requires information on the results of the assessment and measurement results. Measurements can be made through exams, to find out student learning outcomes that reflect the teaching success of teachers. Stiggins and Capuis (2012) explain that assessment is the process of gathering information about student learning to improve learning.

Based on some of the opinions it can be concluded that the notion of evaluation in the field of education is a process of assessing the achievement of educational goals and providing input for

the improvement of educational programs in which includes the process of collecting, processing, and analyzing data carried out systematically and scientifically to see the extent of the program has achieved its objectives based on predetermined criteria. Teacher competency evaluation model developed has two main advantages seen from its usefulness, first, it is useful for selecting professional teacher candidates needed in the I.R. 4.0 era, and second, are useful as evaluation material for mapping the quality of Teacher Education Institution (LPTK) which produce the teacher's candidates in accordance with Indonesian Constitution No. 14 of 2005 concerning Teachers and Lecturers.

The results of Chai, Hwee Ling Koh & Teo's research (2019); Tican & Deniz (2019), Ismail, Husin & Khalid (2018), Anagün (2018), Ajmain, Mahpuz, Rahman & Mohamad (2019), Chou, Shen, Hsiao & Shen, (2018), Van Hong, Tuyen & Luong (2018) shows that the importance of increasing teacher professionalism in learning in various fields by utilizing technology which is emphasized in the pedagogical aspects. These results reinforced this research regarding the importance of developing teacher learning competency evaluation models according to the demands of the I.R. 4.0 era. The evaluation model developed has advantages not only limited to learning competencies but is more comprehensive which includes four competencies namely pedagogical competencies, professional competencies, personality competencies, and social competencies that are adapted to the era.

The four competencies have an important role and complement each other. In this case, the teacher's social competence is also very important in addition to the other three competencies. This is in accordance with the opinion of Friedlander et al. (2018), which states that the teacher's task is to teach students while still paying attention to the balance of the development of knowledge in schools with the

development of students' social attitudes in the community. Meanwhile, the research of Arisman, Getter and Nuryamin (2018) shows that the personality and professional competence of teachers is also a very important competency, which must be possessed by a teacher's candidates. As a center of education, a teacher must be equipped with professionalism, have insight into the subject matter taught, and have a personality that can be emulated by students.

Social competence is the ability of teachers to communicate and socialize effectively to students, education personnel, parents, and surrounding communities (Indonesia Constitution No. 14 of 2005; MONE Regulation No. 16 of 2007). Indicators of teacher social competence, including: (1) being inclusive, acting objectively, and not discriminating because of consideration of gender, religion, race, physical condition, family background, and family social status; (2) communicating effectively, empathically, and politely with fellow educators, educational staff, parents and the community; (3) adaptation to places of work in all regions of the Republic of Indonesia which have socio-cultural diversity, and (4) communicate both verbally and in writing.

To that end, the development of instruments to measure the social competence of teachers' candidates in the I.R. 4.0 era, refers to the four indicators supported by the demands of teacher competence in the I.R. 4.0 era, which is reflected by the top ten skills.

## **Method**

Research on developing teacher social competency assessment instruments in the I.R.4.0 era was a part of research into the development of competency evaluation model of teachers' candidates in the Industrial Revolution 4.0 (I.R. 4.0) era, which will be carried out for 3 years. The focus of this research is developing a

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instruments to measure the social competence of teachers' candidates based on MONE Regulation No. 16 of 2007, reinforced by the top ten skills competency indicators demanded in the I.R. 4.0 era. The developing of the instrument was carried out the following steps: (1) developing the instrument construct, (2) developing the instrument blueprint, (3) writing the instrument items, (4) reviewing the instrument items, (5) revising the instruments based on the results of the items review, and (6) limited testing of instruments that have been developed.

The development of the instrument construct refers to the indicators of teacher social competences in accordance with MONE Regulation 16 of 2007, reinforced by specific competencies, namely the top ten skills needed and prioritized by the workforce (including teachers) towards 2020 formulated by Gleason (2018). Therefore, the construct of social competence of teachers' candidates in the I.R. 4.0 Era, will reflect the four indicators of teacher social competence as stated in Indonesian Constitution No. 14 of 2005 concerning Teachers and Lecturers and MONE Regulation No. 16 of 2007, with the relevant aspects of the top ten skills. Instrument construction to measure the social competence of teachers' candidates in the I.R. 4.0 era which includes four dimensions and is broken down into 15 indicators. The four dimensions were: first, being inclusive, acting objectively, and not discriminating because of consideration of gender, religion, race, physical condition, family background, and family social status; the second, communicating effectively, empathically, and politely with fellow educators, educational staff, parents and the community; the third, adaptation to places of duty throughout the territory of the Republic of Indonesia which has socio-cultural diversity; and the fourth, communicating both orally and in writing.

In accordance with the instrument development stages above, then after the

instrument was prepared, a study was conducted involving measurement experts. This expert review was carried out to establish content validity, which involved seven experts. The results of the next review analyzed to calculate the V Aiken coefficient, which reflects the validity of the instrument. Meanwhile, based on the results of the study the instrument was revised according to the suggestions from expert reviewers. At a later stage, the instrument was tested limited to the teachers' candidates. As for the test subjects in this study were students in the final semester (semester 6) of educational study programs at Yogyakarta State University for three study programs, namely Mathematics Education, Indonesian Language Education, and English Language Education. The number of limited trial samples is 107 students.

Instrument for evaluating social competence of teachers' candidates in the I.R. 4.0 era used in this limited trial is in the paper and pencil, using inventory, graded response or with a polythomus scale. Instrument validation includes content validity carried out through expert analysis, and construct validity was done by exploratory and confirmatory factor analysis (EFA and CFA), while reliability estimation uses the Alpha-Cronbach formula. Data analysis of the results of expert studies was performed by calculating the V Aiken coefficient, while the results of the construct validity analysis were carried out by the EFA and CFA.

### **Findings and Discussion**

The validity of the instrument was tested in contents and extracts. The validity of the content was tested through a study involving seven experts and analyzed using the Aiken's formula. Retnawati (2016, p.19), states that the item can be declared valid, if it has a coefficient value of Aiken's V in medium category, which is a minimum of 0.60. Items that have Aiken's V coefficient < 0.60 are considered invalid. The results of

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the analysis of the content validity of 30 instruments by seven experts, obtained the Aiken V index between 0.61 - 0.93. Based on the calculation results of the Aiken V coefficient obtained 29 items declared valid (has an Aiken coefficient  $V > 0.60$ ), and one item is declared invalid because it has an Aiken coefficient  $V < 0.60$ .

The validity of the extract was tested through factor analysis, both

Table 1. Criterion For Exploratory Factor Analysis

No	Criteria	Value
1	Keyser Mayer Oikin (KMO)	> 0,5
2	Barlett's Test of Sphericity	> 0,05
3	Anti image correlation MSA	> 0,5
4	Eigen value	> 1,0
5	Rotated Factors	> 0,4

The results of construct validity analysis with exploratory factor analysis (EFA) showed 25 valid items and five invalid items, with a KMO value of 0.504, while the significance of the Bartlett's Test was  $p = 0,000$ . For valid instrument items, further tests are conducted, namely confirmatory factor analysis. Hendryadi & Suryani (2014, p. 63) states that the confirmatory model factor analysis aims to see whether the developed model has a goodness of fit or not. The conformity parameters of the confirmatory factor analysis according to Hendryadi & Suryani (2014, pp. 18-19) are presented in Table 2.

exploratory and confirmatory. Wagiran (2015, p. 300) said that exploratory factor analysis was conducted to ascertain whether certain items supported the factors and these factors supported the variables. The criteria for exploratory factor analysis according to Wagiran (2015, p. 303) are as follows:

Table 2. Parameter Of Model Fit in Confirmatory Factor Analysis

No	Criteria	Value
1	Chi Square	P value > 0,05
2	Root Means Square Error of Approximation (RSMEA)	RSMEA = 0,08
3	Goodness Of Fit Index (GFI)	GFI = 0,09
4	Standardized Root Mean Square Residual (SRMR)	SRMR = 0,05
5	Adjusted Goodness of Fit Index (AGFI)	AGFI = 0,90
6	Comparative Fit Index (CFI)	CFI = 0,90
7	Incremental For Index (RFI)	RFI = 0,90

In the next stage, the reliability of the instrument that has been declared valid is estimated. The criteria for determining instrument reliability are based on Alpha coefficients  $> 0.5$  (Wagiran, 2015). Reliability of instrument extraction can be obtained from the results of the confirmatory factor analysis calculation using the formula Construct Reliability (CR) and Variance Extract (VE). Hendryadi & Suryani (2014, p. 17) mentioned that the recommended CR reliability value is more than 0.7 while the recommended VE value is greater than 0.5. The formula for calculating the reliability of extracts according to Hendryadi & Suryani (2014, pp. 17-18) is as follows:

### Construct Reliability

$$\text{Construct Reliability} = \frac{\sum (\text{Standardized loading})^2}{\sum (\text{Standardized loading})^2 + \sum (\text{Measurement Error})}$$

$$\text{Variance Extract} = \frac{\sum (\text{Standardized loading})^2}{\sum (\text{Standardized loading})^2 + \sum (\text{Measurement Error})}$$

The results of confirmatory factor analysis showed a fit model, with Chi-Square value = 290.35;  $p = 0.18$ ; RMSEA = 0.00; GFI = 0.83; SRMR = 0.083; AGFI = 0.80; CFI = 0.86; RFI = 0.28. The reliability results show that the Cronbach Alpha coefficient is 0.40. This results shows that the social competency assessment instruments for teachers' candidates in the I.R. 4.0 era have been developed is feasible to use, with some revisions.

Based on the results obtained based on exploratory factor analysis and confirmatory factor analysis, it can be concluded that the assessment instrument for social competency of teachers candidates have 25 valid items. Of the 25 items that have been declared valid are analyzed by confirmatory factor analysis, and the model is declared fit. Furthermore, the results of the reliability analysis of the instrument with the Cronbach Alpha formula, obtained a reliability coefficient of 0.40 (medium category).

The development of social competency assessment instruments for prospective teachers in the I.R. 4.0 era produced a set of valid instruments, both in terms of content validity and construct validity. However, the instrument that has been developed has a fairly low reliability, which is only 0.40. The low level of reliability is most likely due to two factors, namely aspects of sampling factors or number of items, and changes in test participant performance. The first aspect, namely the number of items in this case only 25 items. In this case, the number of items is directly proportional to the reliability of an instrument. If the number of items increases, the instrument reliability

will be higher. The second factor is the inconsistent performance of the test taker, which in this case can be caused by the guessing aspect. This is common if the test is too difficult, so test takers will tend to guess the answer.

The instrument developed was an instrument to assess the social competence of prospective teachers in the I.R. 4.0 era. Social competence is one of the most important teacher competencies, because it is closely related to the teacher's task as an educator, and an example for students. In this case, Rosyada (2018) states that teachers are a unique profession because there are so many competencies that they must master in carrying out their duties as educators in order to prepare future generations.

One of the competencies that must be possessed by every teacher is social competence, namely the ability to manage social relationships that require a variety of skills, skills and capacities in solving problems that occur in interpersonal relationships (Boucher, 2012). The significance of social competence for teachers can be felt in many social contexts. One of them is with school stakeholders, including school customers, users of school graduates, and community leaders who are very influential in the process of school progress. Significance is also felt with their colleagues in school and students whose achievements are in the hands of the teacher himself.

### Conclusion

Based on the description of the results above, it can be concluded: (1) the instrument for evaluating the social competence of prospective teachers in the I.R. era. 4.0 that has been developed is valid both from the aspect of content validity and construct validity, and (2) the reliability of social competency assessment instruments for prospective teachers in the I.R. era. 4.0

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that has been developed has low reliability. For this reason, this instrument still needs improvement, especially by increasing the number of instrument items, and improving the instrument's sentence construct, thereby minimizing the guessing factor.

## References

- Ajmain, M. T., Mahpuz, A. N. A., Rahman, S. N. H. A., & Mohamad, A. M. (2019). Industrial Revolution 4.0: Innovation and Challenges of Islamic Education Teachers in Teaching. *BITARA International Journal of Civilizational Studies and Human Sciences*, 2(1), 38-47.
- Arisman, A., Getteng, A. R., & Nuryamin, N. (2018). Pengaruh kompetensi kepribadian guru terhadap motivasi belajar peserta didik MTSn 2 Bone Kabupaten Bone. *Jurnal Dirkursus Islam* 6(3), 418-443
- Boucher. (2012). *Social Competence Education for Pre-Service Teachers*. California State University: Sacramento.
- Chai, C. S., Hwee Ling Koh, J., & Teo, Y. H. (2019). Enhancing and modeling teachers' design beliefs and efficacy of technological pedagogical content knowledge for 21st century quality learning. *Journal of Educational Computing Research*, 57(2), 360-384.
- Chou, C. M., Shen, C. H., Hsiao, H. C., & Shen, T. C. (2018). Industry 4.0 Manpower and Its Teaching Connotation in Technical and Vocational Education: Adjust 107 Curriculum Reform. *International Journal of Psychology and Educational Studies*, 5(1), 9-14.
- Mardapi, Djemari. (2018). *Peran evaluasi dalam meningkatkan kualitas pendidikan kejuruan*. Pidato Pelepasan Guru Besar Universitas Negeri Yogyakarta. Yogyakarta: tidak diterbitkan.
- Fitzpatrick, J.L., Sanders, J.R., & Worthen B.R. (2011). *Program evaluation: alternative approach and practical guidelines*. New York: Pearson Education. Inc.
- Friedlander, E. W., Arshan, N., Zhou, S., & Goldenberg, C. (2018). Life wide or school-only learning: approaches to addressing the developing world's learning crisis. *American Educational Research Journal*, 0002831218792841.
- Ghorbani, S., Jafari, S. E. M., & Sharifian, F. (2018). Learning to be: Teachers' competences and practical solutions: A step towards sustainable development. *Journal of Teacher Education for Sustainability*, 20(1), 20-45.
- Gleason, N.W. (Ed) (2018). *Higher education in the era of the fourth industrial revolution*. Singapore: Springer Published.
- Hendryadi, & Suryani. (2014). *Structural equation modeling dengan lisrel 8.80. Pedoman untuk pemula*. Yogyakarta: Kaukaba Dipantara.
- Ismail, S. N., Don, Y., Husin, F., & Khalid, R. (2018). Instructional Leadership and Teachers' Functional Competency across the 21st Century Learning. *International Journal of Instruction*, 11(3), 135-152
- Jones, Anne. (2018). *Vocational Education for the Twenty-First Century*. The University of Melbourne
- Kartowagiran, B. (2011). *Kinerja guru profesional (Guru pasca*

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- sertifikasi). *Jurnal Cakrawala Pendidikan*, 3(3).
- Kartowagiran, B., & Jaedun, A. (2016). Model asesmen autentik untuk menilai hasil belajar siswa sekolah menengah pertama (SMP): Implementasi asesmen autentik di SMP. *Jurnal penelitian dan evaluasi pendidikan*, 20(2), 131-141.
- Kartowagiran, B. (2016). Revitalisasi Sertifikasi Guru Untuk Mewujudkan Tenaga Kependidikan Profesional.
- La Velle, L., & Flores, M. A. (2018). Perspectives on evidence-based knowledge for teachers: acquisition, mobilization and utilization. *Journal of Education for Teaching*, 44(5), 524-538.
- Mertens, D. M. (2010). Social transformation and evaluation. *Evaluation Journal of Australasia*, 10(2), 3-10.
- OECD. (2016). *PISA 2015 result in focus*. German: OECD Publishing.
- Popkova, E.G., Ragulina, Y.V., & Bogovic, A.V. (Eds) (2018). *Industry 4.0: Industrial revolution of the 21<sup>st</sup> Century*. Switzerland: Springer International Publishing
- Kusumawadhani, Prita. (2017). Does teacher certification program lead to better quality teachers? Evidence from Indonesia. *Education Economic Journal*. Vol. 25 Issue 6, 2017. Pg. 590-618
- Republik Indonesia (2005). Undang-undang Nomor 14 Tahun 2005, tentang Guru dan Dosen. Jakarta: Mensekab R.I.
- Republik Indonesia. Peraturan Menteri Pendidikan Nasional Nomor 16 Tahun 2007, tentang Standar Kualifikasi Akademik dan Kompetensi Guru. Jakarta: Sesjen Dikdasmen.
- Scientific Literacy. (Oktober 24, 2014). *Survei internasional TIMSS (Trends In International Mathematics and Science Study)*.
- Stigin, R. & Chapuis, J. (2012). *Introduction to student involved assessment for learning, 2<sup>nd</sup> edition*. Boston: Addison Wesley.
- Sugiyanto, S., Kartowagiran, B., & Jailani, J. (2015). Pengembangan Model Evaluasi Proses Pembelajaran Matematika Di SMP Berdasarkan Kurikulum 2013. *Jurnal Penelitian dan Evaluasi Pendidikan*, 19 (1), 82-95.
- Tican, C., & Deniz, S. (2019). Pre-service Teachers' Opinions about the Use of 21st Century Learner and 21st Century Teacher Skills. *European Journal of Educational Research*, 8(1), 181-197.
- Van Hong, B., Tuyen, T., & Luong, N. T. (2018). Teaching Capacity of Technology Teachers: Applying in the Training Program of Technology Teacher in Vietnam. *American Journal of Educational Research*, 6(12), 1662-1667.
- Wagiran. (2015). *Metodologi penelitian pendidikan*. Yogyakarta: Budi Utama.

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Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan <jurnalhepi@uny.ac.id> Tue, Sep 1, 2020, 11:35 PM

to Amat, me, Amat, Badrun, Ahman, Lukman

Dear Dr. Amat Jaedun:

We have reached a decision regarding your submission to Jurnal Penelitian dan Evaluasi Pendidikan, "DEVELOPING THE TEACHER'S SOCIAL COMPETENCY ASSESSMENT INSTRUMENTS IN INDUSTRIAL REVOLUTION 4.0 ERA".

Our decision is: Minor revisions required.

Please refer to the editor's suggestions in revising the manuscript. We expect to have the revised manuscript back to us before: 10 September 2020. Thank you.

Best regards,  
Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan  
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 **Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan** <jurnalhepi@uny.ac.id> Tue, Nov 3, 2020, 2:15 PM

to Amat, me, Amat, Badrun, Ahman, Lukman

Dear Amat Jaedun:

We have reached a decision regarding your submission to Jurnal Penelitian dan Evaluasi Pendidikan, "DEVELOPING THE TEACHER'S SOCIAL COMPETENCY ASSESSMENT INSTRUMENTS IN INDUSTRIAL REVOLUTION 4.0 ERA".

Our decision is to: Accept your submission for publication in Jurnal Penelitian dan Evaluasi Pendidikan.

We will contact you soon for further administrative concerns.  
Thank you.

Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan  
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**Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan** <jurnalhepi@uny.ac.id> Mon, May 4, 2020, 11:39 AM

DeAR Dr. Amat Jaedun, et al.:

We have reached a decision regarding your submission to Jurnal Penelitian dan Evaluasi Pendidikan, "DEVELOPING THE TEACHER'S SOCIAL COMPETENCY ASSESSMENT INSTRUMENTS IN INDUSTRIAL REVOLUTION 4.0 ERA".

Our decision is: Revisions Required.

Please consider the reviewer's comments and suggestions in revising the manuscript.  
We expect to have the revised manuscript back to us before: 18 May 2020.  
Thank you.

Best regards,  
Editorial Team of Jurnal Penelitian dan Evaluasi Pendidikan  
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Kepada Yth./Bapak/Ibu/Sdr. Rusijono, Amat Jaedun, Badrun Kartowagiran, Ahman, & Lukman A. R. Laliyo  
Penulis Artikel DEVELOPING THE TEACHER'S SOCIAL COMPETENCY ASSESSMENT INSTRUMENTS IN INDUSTRIAL  
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Jurnal Penelitian dan Evaluasi Pendidikan  
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Disampaikan bahwa Redaksi Jurnal Penelitian dan Evaluasi Pendidikan telah mencapai kesimpulan akhir terhadap submisi artikel saudara. Kesimpulan Redaksi adalah "menerima" dan "menerbitkan" artikel yang saudara kirimkan. Artikel saudara akan *available online* di Website Jurnal Penelitian dan Evaluasi Pendidikan dengan detail sebagai berikut:

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Sebagai tahap final proses penerbitan artikel saudara, silakan selesaikan proses pembayaran *Article Publishing Cost (APC)* sebesar **Rp1.100.000,-** (satu juta seratus ribu rupiah) yang dibayarkan melalui akun Bank **No: 0468970056 Ririn Susetyaningsih - BNI**. Bukti pembayaran dapat dikirimkan melalui akun email ini ataupun kontak yang tercantum di bawah **disertai alamat kirim** untuk dapat kami sampaikan Jurnal dalam bentuk **hardprint (2 eksemplar)**.

Demikian, atas perhatian dan kerja sama yang baik disampaikan ucapan terima kasih.

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