

artikel 1

by dodi mulyadi

General metrics

12,405

characters

1,855

words

222

sentences

7 min 25 secreading
time**14 min 16 sec**speaking
time

Score

**39**

Writing Issues

193

Issues left

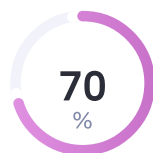
90

Critical

103Advanced

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Plagiarism

**70**

%

34

sources

70% of your text matches 34 sources on the web
or in archives of academic publications

Writing Issues

110	Correctness	
28	Misspelled words	
1	Incomplete sentences	
7	Improper formatting	
1	Misplaced words or phrases	
18	Determiner use (a/an/the/this, etc.)	
9	Comma misuse within clauses	
5	Pronoun use	
14	Punctuation in compound/complex sentences	
3	Incorrect verb forms	
7	Wrong or missing prepositions	
8	Incorrect noun number	
5	Confused words	
4	Faulty subject-verb agreement	
49	Engagement	
49	Word choice	
34	Clarity	
4	Hard-to-read text	
19	Passive voice misuse	
9	Wordy sentences	
2	Word choice	

Unique Words

Measures vocabulary diversity by calculating the percentage of words used only once in your document

23%unique words

Rare Words

Measures depth of vocabulary by identifying words that are not among the 5,000 most common English words.

37%rare words

Word Length

Measures average word length

5.3characters per word

Sentence Length

Measures average sentence length

8.4words per sentence

artikel 1

194 | Description of Pedagogical Content Knowledge (PCK) and Content Knowledge on Muhammadiyah University of Semarang's Preservice Teacher

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195 | Abstract

196 | One of the competencies of teachers to be mastered under UU is pedagogic competence. This study aims to provide an overview of the pedagogic³ competence⁴ of Preservice teachers through the mastery of Pedagogical Content Knowledge (PCK) and Content knowledge (CK). The research method used is descriptive qualitative, with data retrieval technique through essay

tests, questionnaire ⁵ and ⁶ interview. The results showed that of the five PCK indicators, only knowledge of learning strategies to teach chemistry already in ⁷ high category. For Content Knowledge of preservice teachers are in the middle ⁸ category for ⁹ indicators of knowledge of disciplinary content, ¹⁰ whereas ¹¹ knowledge that alternative frameworks for thinking about the content exist and the ¹² knowledge of the relationship between big ideas and the supporting ideas in a content area ¹³ are in the fair category.

Keywords: Pedagogical Content Knowledge (PCK), Content Knowledge (CK), preservice teacher.

Introduction

In recent years, educational research ¹⁴ were identified ¹⁵ that teacher's ¹⁶ competences had ¹⁷ the influenced ¹⁸ on ¹⁹ students's progress learning. ²⁰ Based on a ²¹ number of education research studies identified in ²² large-scale literature ²³ review, teachers' competences makes a difference in their professional ^{24,25} practice and their students' achievement. The improvement in the quality of ²⁶ teaching and learning in classrooms, schools and ²⁷ system related with the ²⁸ capacity of teachers. Some recent research on education states that to improve ²⁹ students' learning achievement, the main thing that needs to ³⁰ be done ³¹ is to ³² improve ³³ teachers' ³⁴ ability. Teacher ³⁵ according to Law no. 14 of 2005 has the ³⁶ main ³⁷ duty to educate, teach, guide, ³⁸ direct, ³⁹ train, assess, and evaluate students at all ⁴⁰ levels of education. Professional teachers are required to be competent as a ⁴¹ learning agent. ⁴² In ⁴³ Law ⁴⁴ No. 14 of 2005 on Teachers and Lecturers mentioned ⁴⁵ that competence is a set of knowledge, skills ⁴⁶ and ⁴⁷ behaviors that must ⁴⁸ be ⁴⁹ ⁵⁰ owned, ⁵¹ lived, ⁵² mastered by teachers or lecturers in performing professional

duties. This competency consists of pedagogic³⁶ competence, professional competence, social competence, and personality competence.

200 Based on Law no. Law No. 14 of 2005 on teachers and lecturers, pedagogic³⁷ competence is the ability of a teacher in managing the learning process associated with students, including understanding insight or educational base, understanding³⁸ of students, curriculum development or syllabus³⁹. Guerriero's pedagogic competitiveness (2013) is one of the key⁴⁰ indicators of qualified teachers. According to Kleickmann et al⁴¹ (2013) PCK⁴² and CK⁴³ is a major component that affects the progress of student learning. According to Blomeke and Delaney (2012)⁴⁴ PCK and CK is a component of teacher professionalism.

Fig. 1 Professional competences of teachers

201 PCK and CK are part of the Cognitive Ability that professional teachers must possess.

Material and Method

202 This research is a mixed method⁴⁵ which uses descriptive⁴⁶ qualitative method.

The subjects of this study are the tenth and eleventh graders of science

203 program from SMA/MA of Semarang which⁴⁷ consists of 72 students. Mixed methods are methods that combine qualitative and quantitative approaches especially⁴⁸ on the data collection phase or methodology. In addition⁴⁹, this⁵⁰

research also uses mixed model studies incorporate two approaches in all stages of the research process (Abbas, 2010). Moreover, Moh. Nazir (2003) states that descriptive research is a method which conducts the research about a group of people status, an object, a set of conditions, a system of thought or a class of events in the present.

This research also used questionnaires in collecting the data which was done by distributing questionnaires to the twelve students of class X and XI IPA SMA / MA in Semarang which consists of 72 students. Questionnaires were distributed to students in order to know the students' opinions about pre service teachers' PCK. The questionnaire used 40 items of statements consisting of five indicators of pre service teachers' PCK. Students were asked to fill in a way to tick mark on the column. The test was done to find out CK of the pre service teachers. This research used 10 items of essay which includes three indicators of CK. Other data retrieval techniques were conducted through interviews. This technique was done to find out PCK and CK of pre service teachers. This technique was conducted on six respondents of chemistry pre service teachers who taught at five different schools. This interview technique concerned on the five PCK indicators and three CK indicators.

Result and Discussion

A. Pedagogical Content Knowledge (PCK)

Pedagogical competence measured in this study relates to Pedagogical Content Knowledge (PCK) and Content Knowledge (CK). In addition, the measurements of PCK used five indicators of the pentagon model proposed by Park and Oliver (2008). The PCK indicators included five components of PCK such as; K1 (the orientation in chemistry teaching), K2 (knowledge of students' understanding in chemistry), K3 (knowledge of chemical curriculum), K4

(knowledge of strategy and representation of learning to teach chemistry), K5 (knowledge of assessment).

208 The five components of pre service⁷⁹ teacher's PCK were measured using questionnaires and interviews on six respondents. Therefore, the results of the questionnaires⁸⁰ which⁸¹ filled out by the students can be seen⁸² from the table 1⁸³ below.

Table 1. The result of PCK's pre service⁸⁴ teacher

No.

Indicator

Score

Category

1.

K1 (the orientation in chemistry teaching)

1.87

Fair

2.

210 K2 (knowledge of students' understanding in chemistry)

1.92

Fair

3.

K3 (knowledge of chemical curriculum)

2.87

High

4.

209 K4 (knowledge of strategy and representation of learning to teach chemistry)

2

Fair

5.

K5 (knowledge of assessment)

1.99

Fair

211 Based on the table above, the results obtained from the five indicators of
chemistry pre service⁸⁵ teacher, the highest score is knowledge of strategy and
representation of learning to teach chemistry indicator 2.87 which is included
in good category, while⁸⁶ the indicator⁸⁷ that has the lowest score is the
orientation in chemistry teaching 1.87 which is included in⁸⁸ enough fair.⁸⁹
Moreover, the results of the research conducted through interviews of six
212 chemistry pre service⁹⁰ teachers in six high schools of Semarang, are
summarized in the table below:

Table 2. Respondent identity

Respondent 1

Respondent 2

Respondent 3

Respondent 4

Respondent 5

Respondent 6

Knowledge background

Chemistry Education

Chemistry Education

Chemistry Education

Chemistry Education

Chemistry Education

Chemistry Education

Teaching experience

30 days

30 days

30 days

30 days

30 days

30 days

Class

X, XI and ⁹¹XII

X and XI

X and XI

X and XI

X and XI

X

Based on ⁹²the interviews result ⁹³which discussed about the most
²¹³ ⁹⁴difficult materials ⁹⁵in class XI that have ⁹⁶been done to chemistry pre service
²¹⁴ teachers during their job training in high school. They have ⁹⁷been explained that
the most ⁹⁸difficult material related to chemistry in eleventh ⁹⁹class of semester
one is thermochemical material. Whereas, there are some of them mention that
XI students have ¹⁰⁰difficult learning in thermochemical material, but some ¹⁰¹argue ¹⁰²
²¹⁵ that thermochemical ¹⁰³material ¹⁰⁴donot make students confused in ¹⁰⁵learning, but
students have difficulty learning in reaction rates materials. While the
chemistry subject in class X, students have ¹⁰⁶difficulties ¹⁰⁷on the atomic
structure material and the periodic system of elements. ¹⁰⁸In addition, students of
XII class have ¹⁰⁹difficulties in learning electrochemical material.

Content Knowledge (CK)

216 The Content Knowledge indicators ¹¹⁰ which used in this research ¹¹¹ consists of
¹¹² knowledge of disciplinary content, ^{113,114} knowledge that ¹¹⁵ alternate framework for
 217 thinking about the content ¹¹⁶ exist and ¹¹⁷ knowledge of the relationship between big
 ideas and supporting ideas in a content area. The three components of CK's ¹¹⁸ pre
¹¹⁹ service teacher were measured using test methods and interviews on the six
 218 respondents. Based on the results of an essay test ¹¹⁹ which filled by chemistry
¹²⁰ pre service teachers, the CK indicator can ¹²¹ be seen in Table 3.

Table 3. The indicator of CK

No.

Indicator

Score

Category

1.

Knowledge of disciplinary content

63.64

Fair

2.

^{122,123} knowledge that alternative frameworks for thinking about the content exist

44.41

Low

3.

¹²⁴ knowledge of the relationship between big ideas and supporting ideas in a
 content area

44.14

Low

From the table above, it can be explained that students find difficulties to understand the material especially the exercises of it. The difficulties in mastering chemistry data have been obtained from the questionnaires which distribute to the students. The materials that the students find difficulties to understand in odd semester are the materials of atomic structure, SPU, hydrocarbon, reaction rate, thermochemistry, chemical equilibrium, colligative properties, electrochemistry, redox and stoichiometry. In addition, Student learning difficulties are the effect of mastery pre service teacher Content Knowledge. To know the material understanding mastery of the chemistry pre service teachers especially on the difficult material 61 which can be described that it is included in fair category. The average CK of potential chemistry teachers for difficult materials is 61 in the medium category. The description of pre service teachers' material understanding mastery on the difficult material is listed in Table 4.

Discussion

Mastery of PCK is the most important part in determining the success of student learning. But this mastery of PCK can be further enhanced by the longer teaching experience of teachers. Unlike PCK, the mastery of material (CK) is absolutely necessary to be mastered by prospective teachers before they complete their studies at the university level. Good CK satisfaction will make it easier for prospective chemistry teachers to start their career in apprentice school. In addition, better CK mastery will increase students' self-esteem confidence. Based on the results of the study known mastery of PCK and CK these prospective teachers are in the low to moderate category. The results of this study provide an overview of the condition of prospective

teachers. This description can be used by policy makers¹⁶⁶ primarily to determine passing standards for prospective teachers and teachers in positions nationally.

Table 4. The description of pre service¹⁶⁷ teachers' material understanding mastery on the difficult¹⁶⁸ material

No.

Material

Means Score

Result

1

Atom structure

61

Enough

2

The periodic system of elements

76.33

good

3

Stoichiometry

84.67

Very good

4

Hydrocarbons

63.5

enough

5

Reaction rate

52.3

bad

6

Termochemistry¹⁶⁹

45

Very bad

7

Chemical equilibrium

40.3

very bad

8

ColligativeSolutions

87.67

Very good

9

Redox reaction

53.33

bad

10

electrochemistry

44.83

Very bad

224

Conclusion

The result of these research¹⁷⁰ shown there were differences in the structures of teacher education were¹⁷¹ reasonably well reflected in participants' CK and PCK.

225 These ¹⁷²result had the ¹⁷³corelative ¹⁷⁴result with Imaduddin's research (2014). From these ^{175,176}research we know ¹⁷⁷PCK ¹⁷⁸pre service teacher included in ^{179,180}fair category. In the other ¹⁸²side ¹⁸³CK ¹⁸⁴pre service teacher was in ¹⁸⁵low category. Just in ¹⁸⁶knowledge of disciplinary content of ¹⁸⁷preservices teacher indicator included in ^{188,189,190}fair category.

References

Abbas. (2010). Strategi dan Pilihan Mengajar Berbasis Sekolah. Jakarta: Grasindo.

226 Blomeke, S., Delaney, S. (2012). Assessment of Teacher Knowledge Across Countries: a Review of the State Research. ZDM Mathematics Education, 44, 223-247.

Guerriero, S. (2013). Teacher"s Pedagogical Knowledge and The Teaching Profession (Background Report and Project Objectives). OECD Report. ¹⁹¹page 1-7.

227 Kleickmann, ¹⁹²T., et al. (2013). Teachers' Content Knowledge and Pedagogical Content Knowledge: The Role of Structural Differences in Teacher Education Journal of Teacher Education. 64(1): 90–106

Moh. Uzer Usman. (2005). Menjadi Guru Profesional. ¹⁹³Bandung : Remaja Rosdakarya.

1.	Mathematic → Mathematics	Confused Words	Correctness
2.	email → Email	Misspelled Words	Correctness
3.	pedagogic → academic, educational, scholastic	Word Choice	Engagement
4.	competence → power	Word Choice	Engagement
5.	, and	Punctuation in Compound/Complex Sentences	Correctness
6.	interview → interviews	Incorrect Noun Number	Correctness
7.	the high	Determiner Use (a/an/the/this, etc.)	Correctness
8.	category → class, group, grade	Word Choice	Engagement
9.	indicators → signs	Word Choice	Engagement
10.	. In contrast, knowledge	Hard-to-read text	Clarity
11.	knowledge → understanding, experience	Word Choice	Engagement
12.	are → is	Faulty Subject-Verb Agreement	Correctness
13.	fair → right, appropriate, good	Word Choice	Engagement
14.	were → was	Faulty Subject-Verb Agreement	Correctness
15.	were identified	Passive Voice Misuse	Clarity
16.	competenceshad → competence had , competencies had, competences had	Misspelled Words	Correctness
17.	the influenced	Determiner Use (a/an/the/this, etc.)	Correctness

18.	students's → students'	Incorrect Noun Number	Correctness
19.	. Based	Improper Formatting	Correctness
20.	a number of → several, some, many	Wordy Sentences	Clarity
21.	the large-scale, or a large-scale	Determiner Use (a/an/the/this, etc.)	Correctness
22.	, and	Comma Misuse within Clauses	Correctness
23.	system → systems	Incorrect Noun Number	Correctness
24.	related with → related with	Improper Formatting	Correctness
25.	with → to	Wrong or Missing Prepositions	Correctness
26.	be done	Passive Voice Misuse	Clarity
27.	improve → enhance	Word Choice	Engagement
28.	ability → abilities	Incorrect Noun Number	Correctness
29.	, according	Punctuation in Compound/Complex Sentences	Correctness
30.	main → primary	Word Choice	Engagement
31.	a direct	Determiner Use (a/an/the/this, etc.)	Correctness
32.	in	Wrong or Missing Prepositions	Correctness
33.	In-Law → In-Law	Misspelled Words	Correctness
34.	, and	Comma Misuse within Clauses	Correctness
35.	be owned	Passive Voice Misuse	Clarity
36.	pedagogic → academic, scholastic,	Word Choice	Clarity

	educational		
37.	pedagogic → educational	Word Choice	Clarity
38.	understanding → knowledge	Word Choice	Engagement
39.	, or	Punctuation in Compound/Complex Sentences	Correctness
40.	key → critical	Word Choice	Engagement
41.	et al. → et al.	Comma Misuse within Clauses	Correctness
42.	2013),	Comma Misuse within Clauses	Correctness
43.	major → significant	Word Choice	Engagement
44.	2012),	Comma Misuse within Clauses	Correctness
45.	mixed method → mixed-method	Misspelled Words	Correctness
46.	the descriptive	Determiner Use (a/an/the/this, etc.)	Correctness
47.	, which	Punctuation in Compound/Complex Sentences	Correctness
48.	, especially	Punctuation in Compound/Complex Sentences	Correctness
49.	. In	Improper Formatting	Correctness
50.	In addition → Also, Besides	Wordy Sentences	Clarity
51.	to incorporate	Incorrect Verb Forms	Correctness
52.	approaches → strategies	Word Choice	Engagement
53.	which conducts → that conducts	Pronoun Use	Correctness
54.	researches	Wordy Sentences	Clarity

55.	, or	Punctuation in Compound/Complex Sentences	Correctness
56.	, which	Punctuation in Compound/Complex Sentences	Correctness
57.	, which	Punctuation in Compound/Complex Sentences	Correctness
58.	were distributed	Passive Voice Misuse	Clarity
59.	in order to → to	Wordy Sentences	Clarity
60.	pre-service → pre-service	Misspelled Words	Correctness
61.	questionnaire → survey, poll, census	Word Choice	Engagement
62.	pre-service → pre-service	Misspelled Words	Correctness
63.	were asked	Passive Voice Misuse	Clarity
64.	was done	Passive Voice Misuse	Clarity
65.	pre-service → pre-service	Misspelled Words	Correctness
66.	10 → ten	Improper Formatting	Correctness
67.	, which	Punctuation in Compound/Complex Sentences	Correctness
68.	were conducted	Passive Voice Misuse	Clarity
69.	was done	Passive Voice Misuse	Clarity
70.	the PCK	Determiner Use (a/an/the/this, etc.)	Correctness
71.	pre-service → pre-service	Misspelled Words	Correctness
72.	was conducted	Passive Voice Misuse	Clarity
73.	conducted → performed	Word Choice	Engagement

74.	pre-service → pre-service	Misspelled Words	Correctness
75.	teacherswho → teachers who, teacher who	Misspelled Words	Correctness
76.	.This → —this	Incomplete Sentences	Correctness
77.	en → with	Wrong or Missing Prepositions	Correctness
78.	In addition → Also, Besides	Wordy Sentences	Clarity
79.	pre-service → pre-service	Misspelled Words	Correctness
80.	questionnaires → surveys, polls, inquiries	Word Choice	Engagement
81.	which	Pronoun Use	Correctness
82.	<i>be seen</i>	Passive Voice Misuse	Clarity
83.	the table	Determiner Use (a/an/the/this, etc.)	Correctness
84.	pre-service → pre-service	Misspelled Words	Correctness
85.	pre-service → pre-service	Misspelled Words	Correctness
86.	,while → . In contrast,	Hard-to-read text	Clarity
87.	indicator → sign, symbol, index	Word Choice	Engagement
88.	<i>is included</i>	Passive Voice Misuse	Clarity
89.	enough fair → fair enough	Misplaced Words or Phrases	Correctness
90.	pre-service → pre-service	Misspelled Words	Correctness
91.	, and	Comma Misuse within Clauses	Correctness
92.	the result of the interview, the result of the interviews	Incorrect Noun Number	Correctness

93.	about	Wrong or Missing Prepositions	Correctness
94.	difficult materials	Misspelled Words	Correctness
95.	been done	Passive Voice Misuse	Clarity
96.	pre-service → pre-service	Misspelled Words	Correctness
97.	been explained	Passive Voice Misuse	Clarity
98.	difficult → challenging	Word Choice	Engagement
99.	classof → class of	Misspelled Words	Correctness
100.	difficult → difficulty	Confused Words	Correctness
101.	material → article, content	Word Choice	Engagement
102.	, but some → . Still, some	Hard-to-read text	Clarity
103.	material → content	Word Choice	Engagement
104.	donot → do not, don't	Misspelled Words	Correctness
105.	learning → education	Word Choice	Engagement
106.	difficulties → problems	Word Choice	Engagement
107.	en → with, in	Wrong or Missing Prepositions	Correctness
108.	In addition → Also, Besides	Wordy Sentences	Clarity
109.	difficulties → challenges, problems	Word Choice	Engagement
110.	which	Pronoun Use	Correctness
111.	consists → consist	Faulty Subject-Verb Agreement	Correctness
112.	of knowledge → of knowledge	Improper Formatting	Correctness

113.	the knowledge, or a knowledge	Determiner Use (a/an/the/this, etc.)	Correctness
114.	knowledge → experience	Word Choice	Engagement
115.	alternate → other	Word Choice	Engagement
116.	exist → exists	Faulty Subject-Verb Agreement	Correctness
117.	knowledge → understanding	Word Choice	Engagement
118.	pre-service → pre-service	Misspelled Words	Correctness
119.	which	Pronoun Use	Correctness
120.	pre-service → pre-service	Misspelled Words	Correctness
121.	be seen	Passive Voice Misuse	Clarity
122.	the knowledge	Determiner Use (a/an/the/this, etc.)	Correctness
123.	knowledge → understanding, awareness	Word Choice	Engagement
124.	knowledge → understanding	Word Choice	Engagement
125.	be explained	Passive Voice Misuse	Clarity
126.	to understand → in understanding	Incorrect Verb Forms	Correctness
127.	, especially	Punctuation in Compound/Complex Sentences	Correctness
128.	difficulties → problems, challenges	Word Choice	Engagement
129.	been obtained	Passive Voice Misuse	Clarity
130.	materials → stuff	Word Choice	Engagement
131.	difficulties → problems	Word Choice	Engagement

132.	difficulties → difficult	Confused Words	Correctness
133.	an odd, or the odd	Determiner Use (a/an/the/this, etc.)	Correctness
134.	semester → semesters	Incorrect Noun Number	Correctness
135.	, and	Comma Misuse within Clauses	Correctness
136.	<i>The materials that the students find difficulties to understand in odd semester are the materials of atomic structure, SPU, hydrocarbon, reaction rate, thermochemistry, chemical equilibrium, colligative properties, electrochemistry, redox and stoichiometry.</i>	Hard-to-read text	Clarity
137.	In addition → Also, Besides	Wordy Sentences	Clarity
138.	mastery of	Wrong or Missing Prepositions	Correctness
139.	pre-service → pre-service	Misspelled Words	Correctness
140.	material → real	Word Choice	Engagement
141.	pre-service → pre-service	Misspelled Words	Correctness
142.	, especially	Punctuation in Compound/Complex Sentences	Correctness
143.	difficult → problematic	Word Choice	Engagement
144.	, which	Punctuation in Compound/Complex Sentences	Correctness
145.	<i>be described</i>	Passive Voice Misuse	Clarity
146.	<i>is included</i>	Passive Voice Misuse	Clarity
147.	fair → appropriate, good	Word Choice	Engagement
148.			

	the fair	Determiner Use (a/an/the/this, etc.)	Correctness
149.	difficult → delicate	Word Choice	Engagement
150.	category → group	Word Choice	Engagement
151.	pre-service → pre-service	Misspelled Words	Correctness
152.	material → real	Word Choice	Engagement
153.	difficult → problematic	Word Choice	Engagement
154.	material → stuff, element	Word Choice	Engagement
155.	is listed	Passive Voice Misuse	Clarity
156.	important → crucial, essential, critical	Word Choice	Engagement
157.	longer → more extended	Word Choice	Engagement
158.	mastery → knowledge, ability, skill	Word Choice	Engagement
159.	the material	Determiner Use (a/an/the/this, etc.)	Correctness
160.	absolutely	Wordy Sentences	Clarity
161.	Good → Excellent, Reasonable	Word Choice	Engagement
162.	In addition → Also, Besides	Wordy Sentences	Clarity
163.	known → is known	Incorrect Verb Forms	Correctness
164.	mastery → skill, knowledge, proficiency, ability	Word Choice	Engagement
165.	CK,	Punctuation in Compound/Complex Sentences	Correctness
166.	policy makers → policymakers	Confused Words	Correctness

167.	pre-service → pre-service	Misspelled Words	Correctness
168.	difficult → problematic	Word Choice	Engagement
169.	Termochemistry → Thermochemistry	Misspelled Words	Correctness
170.	these research → this research	Determiner Use (a/an/the/this, etc.)	Correctness
171.	that were	Pronoun Use	Correctness
172.	result → results	Incorrect Noun Number	Correctness
173.	correlative → correlative	Confused Words	Correctness
174.	result → effect	Word Choice	Engagement
175.	these research → this research	Determiner Use (a/an/the/this, etc.)	Correctness
176.	research,	Comma Misuse within Clauses	Correctness
177.	pre-service → pre-service	Misspelled Words	Correctness
178.	teacher → teachers	Incorrect Noun Number	Correctness
179.	fair → appropriate, good	Word Choice	Engagement
180.	the fair	Determiner Use (a/an/the/this, etc.)	Correctness
181.	In → On	Wrong or Missing Prepositions	Correctness
182.	side,	Comma Misuse within Clauses	Correctness
183.	pre-service → pre-service	Misspelled Words	Correctness
184.	the low	Determiner Use (a/an/the/this, etc.)	Correctness
185.	category → grade, class, group	Word Choice	Engagement

186.	the knowledge	Determiner Use (a/an/the/this, etc.)	Correctness
187.	preservices → preservice, services	Misspelled Words	Correctness
188.	fair → appropriate, good	Word Choice	Engagement
189.	the fair	Determiner Use (a/an/the/this, etc.)	Correctness
190.	fair → appropriate, neutral	Word Choice	Engagement
191.	page → Page	Improper Formatting	Correctness
192.	T.,	Punctuation in Compound/Complex Sentences	Correctness
193.	Bandung :	Improper Formatting	Correctness
194.	<i>Description of Pedagogical Content Knowledge (PCK) and Content Knowledge on Muhammadiyah</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
195.	<i>Abstract One of the competencies of teachers to be mastered under</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
196.	<i>is pedagogic competence. This study aims to provide an overview of the pedagogic competence of Preservice teachers through the mastery of Pedagogical Content Knowledge (PCK) and Content knowledge (CK). The research method used is descriptive qualitative, with data retrieval technique through essay ...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
197.	<i>the influenced on students's progress learning. Based on a number</i>	Description of pedagogical content knowledge (PCK) and ...	Originality

	<i>of education research studies identified in large-scale literature review, teachers' competences makes a difference in their professional practice and their students' achievement. The improvement in the quality of teaching and learnin...</i>	http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	
198.	<i>no. 14 of 2005 has the main duty to educate, teach, guide, direct, train, assess, and evaluate students at all levels of education. Professional teachers are required to be competent as a learning agent. In</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
199.	<i>No. 14 of 2005 on Teachers and Lecturers mentioned that competence is a set of knowledge, skills and behaviors that must be owned, lived, mastered by teachers or lecturers in performing professional duties. This competency consists of pedagogic competence, professional competence, social competence...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
200.	<i>No. 14 of 2005 on teachers and lecturers, pedagogic competence is the ability of a teacher in managing the learning process associated with students, including understanding insight or educational base, understanding of students, curriculum development or syllabus. Guerriero's pedagogic competitive...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
201.	<i>PCK and CK are part of the Cognitive Ability that professional</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
202.	<i>This research is a mixed method which uses</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality

		ntent.pdf	
203.	<i>Mixed methods are methods that combine qualitative and quantitative approaches</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
204.	<i>PCK. Students were asked to fill in a way to tick mark on the column. The test was done to find out CK of the pre service teachers. This research used 10 items of essay which includes three indicators of CK. Other data retrieval techniques were conducted through interviews. This technique was done ...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
205.	<i>teachers. This technique was conducted on six respondents of chemistry</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
206.	<i>Pedagogical competence measured in this study relates to</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
207.	<i>The PCK indicators included five components of PCK such as; K1 (the orientation in chemistry teaching), K2 (knowledge of students' understanding in chemistry), K3 (knowledge of chemical curriculum), K4 (knowledge of strategy and representation of learning to teach chemistry), K5 (knowledge of asse...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
208.	<i>teacher's PCK were measured using questionnaires and interviews on six respondents. Therefore, the results of the questionnaires which filled out by the students can be seen from the table 1 below. Table 1. The result of PCK's</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality

209.	<i>K4 (knowledge of strategy and representation of learning to teach chemistry</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
210.	<i>chemistry) 1.92 Fair 3. K3 (knowledge of chemical curriculum) 2.87 High 4. K4 (knowledge of strategy and representation of learning to teach chemistry) 2 Fair 5. K5 (knowledge of assessment) 1.99 Fair Based on the table above, the results obtained from the five indicators of chemistry</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
211.	<i>teacher, the highest score is knowledge of strategy and representation of learning to teach chemistry indicator 2.87 which is included in good category, while the indicator that has the lowest score is the orientation in chemistry teaching 1.87 which is included in enough fair. Moreover, the result...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
212.	<i>teachers in six high schools of Semarang, are summarized in the table below: Table 2. Respondent identity</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
213.	<i>teachers during their job training in high school. They have been explained that the most difficult material related to chemistry in eleventh</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
214.	<i>semester one is thermochemical material. Whereas, there are some of them mention that XI students have difficult learning in thermochemical material, but some argue that</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
215.	<i>make students confused in learning, but students have difficulty learning in reaction rates materials. While the</i>	Description of pedagogical content knowledge (PCK) and ...	Originality

	<i>chemistry subject in class X, students have difficulties on the atomic structure material and the periodic system of elements. In addition, students of XII class have difficulties in lea...</i>	http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	
216.	<i>and knowledge of the relationship between big ideas and supporting ideas in a content area. The three components of CK's</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
217.	<i>teacher were measured using test methods and interviews on the six respondents. Based on the results of an essay test which filled by chemistry</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
218.	<i>teachers, the CK indicator can be seen in Table 3. Table 3. The indicator of CK No. Indicator Score Category 1. Knowledge of disciplinary content 63.64 Fair 2. knowledge that alternative frameworks for thinking about the content exist 44.41 Low 3. knowledge of the relationship between big ideas ...</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
219.	<i>teacher Content Knowledge. To know the material understanding mastery of the chemistry</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
220.	<i>service teachers especially on the difficult material 61 which can be described that it is included in fair category. The average CK of potential chemistry teachers for difficult materials is 61 in the medium category. The description of</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality
221.	<i>Discussion Mastery of PCK is the most important part in determining the success of student learning. But this mastery of PCK can be further</i>	Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf	Originality

	<p><i>enhanced by the longer teaching experience of teachers. Unlike PCK, the mastery of material (CK) is absolutely necessary to be mastered by prospective teachers...</i></p>	<p>ntent.pdf</p>	
222.	<p><i>teachers are in the low to moderate category. The results of this study provide an overview of the condition of</i></p>	<p>Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf</p>	Originality
223.	<p><i>teachers. This description can be used by policy makers primarily to determine passing standards for</i></p>	<p>Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf</p>	Originality
224.	<p><i>Conclusion The result of these research shown there were differences in the structures of teacher education were reasonably well reflected in participants' CK and PCK. These result had the corelative result with Imaduddin's research</i></p>	<p>Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf</p>	Originality
225.	<p><i>teacher was in low category. Just in knowledge of disciplinary content of preservices teacher indicator included in fair category.</i></p>	<p>Description of pedagogical content knowledge (PCK) and ... http://lib.unnes.ac.id/33255/1/PDF_Description_of_pedagogical_content.pdf</p>	Originality
226.	<p><i>S., Delaney, S. (2012). Assessment of Teacher Knowledge Across Countries: a Review of the State</i></p>	<p>Making Progress on Mathematical Knowledge for Teaching</p>	Originality
227.	<p><i>2013). Teachers' Content Knowledge and Pedagogical Content Knowledge: The Role of Structural Differences in Teacher Education Journal of Teacher Education. 64(1): 90–106</i></p>	<p>Making Progress on Mathematical Knowledge for Teaching</p>	Originality