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Journal: Mathematics (ISSN 2227-7390)
 Manuscript ID: mathematics-1491592
 Type: Article
 Title: Developing a Constructive Conceptual Framework of a Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape
 Authors: Rooseylina Ekawati*, Masriyah, Abdul Haris Rosyidi, Budi Priyo Prawoto, Rully Charitas Indra Prahmana, Fou-Lai Lin
 Abstract: Space and shape is a topic in geometry that should be learned by students. The knowledge about space and shape will be delivered by teachers to students in the learning activities. Hence, teachers must be mastering the topic first to avoid any misconceptions. This study aimed at proposing conceptual framework for instrument to examine pre-service teachers Mathematics Content Knowledge (MCK) on space and shape content and examine the profile of Indonesian Mathematics pre-service teacher on this topic. The method of this study involves mixed method. The developed MCK instrument were delivered to 21 Senior Indonesian Pre-Service Mathematics teachers. The MCK responses were analyzed by Exploratory Factor Analysis and described qualitatively. The result showed that the instrument has a very good items with consistent reliability coefficient with four factor components namely: figural representation, area and circumference of object, relationship of properties of objects and figural reasoning. With respect to the four factors, Indonesian Pre-Service Mathematics Teachers have challenges in figural representation and reasoning factors. However, they performed better in area and circumference of objects and the relationships of properties of objects. The findings lead to the redesigning curriculum for pre-service mathematics teachers' learning.

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Authors' Responses to Reviewer's Comments (Reviewer 1)

Authors' Responses to Reviewer's Comments (Reviewer 1)

Author's Notes Dear Reviewer,

Greetings from Indonesia and wishing you a great day with happiness and healthy condition in this era COVID-19.

First of all, I would like to thank you for allowing me to submit our revised manuscript entitled Developing Constructive Conceptual Framework of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape with Manuscript ID mathematics-1491592 to Mathematics. We really appreciate the time and effort that you have dedicated to providing your valuable feedback on my manuscript. We are grateful to you for your insightful comments on my paper.

Furthermore, we have been revised the manuscript based on your comments, suggestions, and remarks, such as more information in the method section, comprehensive improvement in results and discussion, and the brief treatment of limitations of the study. We resume the revised manuscript in the table for responding to your comment, as follows,

Reviewer's Comment	Respond to Reviewer
The work " Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape " is of interest to the educational community and deals with relevant aspects such as the knowledge of future teachers in relation to geometric aspects. Although the summary is difficult to follow due to grammatical errors in English, it duly reflects the development of the article. The introduction is adequate from the point of view of references to the teacher's knowledge, although there is a lack of	The article has been proofread and edited by professional proofreader to reduce and avoid grammatical errors. The information of geometric learning has been added in the third paragraph (line 62-74)

mail.google.com/mail/u/0/#search/mathematics%40mdpi.com/FMfcgGllCfbtgrVzBxGMwHqgrT

[Mathematics] Manuscript ID: mathematics-1491592 - Major Revisions External Inbox x

Mathematics Editorial Office <mathematics@mdpi.com>
 to: Masriyah, Abdul, Budi, Rully, Fou-Lai, Mathematics

Dear Dr. Ekawati,

Thank you again for your manuscript submission:

Manuscript ID: mathematics-1491592
 Type of manuscript: Article
 Title: Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape
 Authors: Rooseylina Ekawati*, Masriyah Masriyah, Abdul Haris Rosyidi, Budi Priyo Prawoto, Rully Charitas Indra Prahmana, Fou-Lai Lin
 Received: 17 November 2021
 E-mail: rooseylinaekawati@unesa.ac.id, masriyah@unesa.ac.id, abdulharis@unesa.ac.id, budiprawoto@unesa.ac.id, rully.indra@mpmat.uad.ac.id, linl@math.ntnu.edu.tw

Your manuscript has now been reviewed by experts in the field. Please find

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mathematics@mdpi.com

25 of 33

[Mathematics] Manuscript ID: mathematics-1491592 - Revision Reminder External Inbox x

Mathematics Editorial Office <mathematics@mdpi.com>
to me, Masriyah, Abdul, Budi, Rully, Fou-Lai, Mathematics

Mon, Dec 6, 2021, 3:34 PM

Dear Dr. Ekawati,

We sent a revision request for the following manuscript on 25 November 2021.

Manuscript ID: mathematics-1491592
Type of manuscript: Article
Title: Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape
Authors: Rooseylina Ekawati*, Masriyah Masriyah, Abdul Haris Rosyidi, Budi Priyo Prawoto, Rully Charitas Indra Prahmana, Fou-Lai Lin
Received: 17 November 2021
E-mails: rooseylinaekawati@unesa.ac.id, masriyah@unesa.ac.id, abdulharis@unesa.ac.id, budiorawoto@unesa.ac.id, rully.indra@mpomat.uad.ac.id, linf@math.ntnu.edu.tr

May we kindly ask you to update us on the progress of your revisions? If you

mail.google.com/mail/u/0/#search/mathematics%40mdpi.com/FMfcgzGIMKDBNfFIBhqS5pPxfzwhXw

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24 of 33

[Mathematics] Manuscript ID: mathematics-1491592 - Manuscript Resubmitted External Inbox x

Submission System <submission@mdpi.com>
to me, Masriyah, Abdul, Budi, Rully, Fou-Lai

Tue, Dec 7, 2021, 9:24 PM

Dear Dr. Ekawati,

Thank you very much for resubmitting the modified version of the following manuscript:

Manuscript ID: mathematics-1491592
Type of manuscript: Article
Title: Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape
Authors: Rooseylina Ekawati*, Masriyah Masriyah, Abdul Haris Rosyidi, Budi Priyo Prawoto, Rully Charitas Indra Prahmana, Fou-Lai Lin
Received: 17 November 2021
E-mails: rooseylinaekawati@unesa.ac.id, masriyah@unesa.ac.id, abdulharis@unesa.ac.id, budiorawoto@unesa.ac.id, rully.indra@mpomat.uad.ac.id, linf@math.ntnu.edu.tr

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mathematics@mdpi.com

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19 of 33

[Mathematics] Manuscript ID: mathematics-1491592 - Revised Version Received External Inbox x

Mathematics Editorial Office <mathematics@mdpi.com>
to me, Masriyah, Abdul, Budi, Rully, Fou-Lai, Mathematics

Mon, Dec 13, 2021, 10:11 AM

Dear Dr. Ekawati,

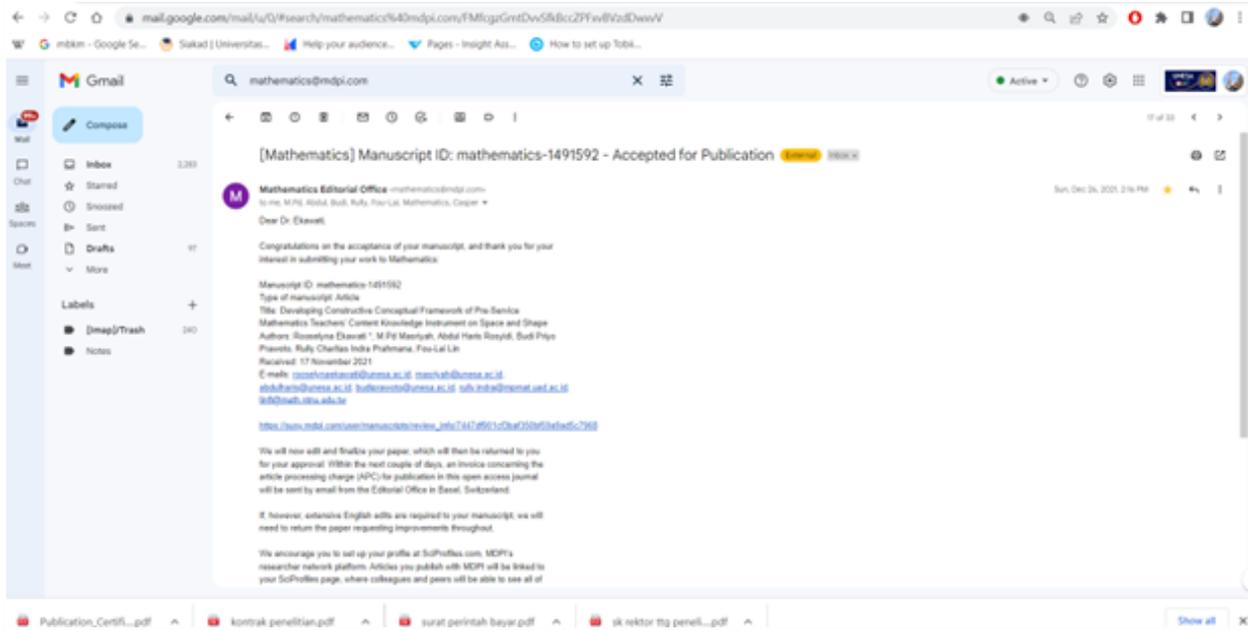
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Received: 17 November 2021
E-mails: rooseylinaekawati@unesa.ac.id, masriyah@unesa.ac.id, abdulharis@unesa.ac.id, budiorawoto@unesa.ac.id, rully.indra@mpomat.uad.ac.id, linf@math.ntnu.edu.tr

https://susy.mdpi.com/user/manuscripts/review_info/7447df901cf3ba1350b659a9a5c7968

We will continue processing your paper and will keep you informed about the status of your submission.

Kind regards,



Reviewer 1:

The work "Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape" is of interest to the educational community and deals with relevant aspects such as the knowledge of future teachers in relation to geometric aspects. Although the summary is difficult to follow due to grammatical errors in English, it duly reflects the development of the article. The introduction is adequate from the point of view of references to the teacher's knowledge, although there is a lack of providing a geometric learning and/or visualization framework, which could justify later the selection or design of activities. The methodology section is poorly supported in this regard. In subsection 2.2.1, in the characterization of the instrument items, no citations are provided. For example, on what basis do the authors consider four types of context? the same with sub-domains.

The results are clearly presented, and the tables provide an adequate description of the instrument items and responses. The analysis of the responses is also clear. Regarding Figure 1, I do not understand the purpose of the task: to compare the areas of the sections "inside the triangle"? maybe it is a problem with the translation, but the statement is not clear to me.

The discussion and conclusions are clear and include works on preservice teacher's knowledge, although again there is a lack of research regarding geometric knowledge. On several occasions the work has been difficult to understand due to errors in English grammar.

Review Report Form

English language and style Extensive editing of English language and style required
 Moderate English changes required
 English language and style are fine/minor spell check required
 I don't feel qualified to judge about the English language and style

	Yes	Can be improved	Must be improved	Not applicable
Does the introduction provide sufficient background and include all relevant references?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the research design appropriate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the methods adequately described?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the results clearly presented?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the conclusions supported by the results?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and Suggestions for Authors

The work "Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape" is of interest to the educational community and deals with relevant aspects such as the knowledge of future teachers in relation to geometric aspects. Although the summary is difficult to follow due to grammatical errors in English, it duly reflects the development of the article. The introduction is adequate from the point of view of references to the teacher's knowledge, although there is a lack of providing a geometric learning and/or visualization framework, which could justify later the selection or design of activities. The methodology section is poorly supported in this regard. In subsection 2.2.1, in the characterization of the instrument items, no citations are provided. For example, on what basis do the authors consider four types of context? the same with sub-domains.

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Reviewer 2:

Submit or Save as draft (submit later)

Review Report Form

English language and style Extensive editing of English language and style required
 Moderate English changes required
 English language and style are fine/minor spell check required
 I don't feel qualified to judge about the English language and style

	Yes	Can be improved	Must be improved	Not applicable
Does the introduction provide sufficient background and include all relevant references?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the research design appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the methods adequately described?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the results clearly presented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the conclusions supported by the results?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and Suggestions for Authors
Dear authors,
Comments for improvement are as attached.

Thanks

[peer-review-15952579.v1.pdf](#)

Submission Date 17 November 2021

Date of this review 21 Nov 2021 05:26:37



Response to reviewer:

Dear Prof. Casper Xie
 Editor of Mathematics

Greetings from Indonesia and wishing you a great day with happiness and healthy condition in this era COVID-19.

First of all, I would like to thank you for allowing me to submit our revised manuscript entitled Developing Constructive Conceptual Framework of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape with Manuscript ID mathematics-1491592 to Mathematics. We really appreciate the time and effort that you and the reviewers have dedicated to providing your valuable feedback on my manuscript. We are grateful to the reviewers for their insightful comments on my paper.

Furthermore, we have been revised the manuscript based on the reviewers' comments, suggestions, and remarks, such as more information in the method section, comprehensive improvement in results and discussion, and the brief treatment of limitations of the study. we resume the revised manuscript in the table for responding to reviewers' comment, as follows,

Reviewer	Reviewer's Comment	Respond to Reviewer
1	<p>The work " Understanding Constructive Component of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape " is of interest to the educational community and deals with relevant aspects such as the knowledge of future teachers in relation to geometric aspects. Although the summary is difficult to follow due to grammatical errors in English, it duly reflects the development of the article. The introduction is adequate from the point of view of references to the teacher's knowledge, although there is a lack of providing a geometric learning and/or visualization framework, which could justify later the selection or design of activities</p>	<p>The article has been proofread and edited by professional proofreader to reduce and avoid grammatical errors.</p> <p>The information of geometric learning has been added in the third paragraph (line 62-74)</p>
	<p>The results are clearly presented, and the tables provide an adequate description of the instrument items and responses. The analysis of the responses is also clear. Regarding Figure 1, I do not understand the purpose of the task: to compare the areas of the sections "inside the triangle"? maybe it is a problem with the translation, but the statement is not clear to me.</p>	<p>The purpose of the task is to compare the area of section inside of triangle</p>
	<p>The discussion and conclusions are clear and include works on preservice teacher's knowledge,</p>	<p>Related research on knowledge has been written in line 315.</p>

	<p>although again there is a lack of research regarding geometric knowledge. On several occasions the work has been difficult to understand due to errors in English grammar.</p>	<p>Regarding to Zilkova et al in Birel (2020), teachers' geometry knowledge due to geometric shapes and the characteristics were quite low.</p> <p>Kurt-Birel, G. Analysis of primary school teachers' knowledge of geometry. International Electronic Journal of Elementary Education. 2020, 12 (4), 303-309.</p> <p>The article has been proofread and edited by professional proofreader to reduce and avoid grammatical errors</p>
2	<p>Justification of choosing Shape and Space for this study should be clearly addressed by the authors. Does this topic important or relevant based on any reports/studies from Indonesia? Did the authors conduct the need analysis prior in order to identify the this topic? • What motivates the authors to measure MCK of Shape and Space? Kotze (2007) has conducted study on Shape and Space, then how much the said study influenced this study? • Theoretical background should be included as one of subtopic in between Introduction and Research Method and explain the chosen theory within the context of this study. • Authors have to highlight their contribution to the body of knowledge particularly in mathematics education. • Article must be submitted for proofreading and should fulfil the journals</p>	<p>There is a lack of research publication for teachers' MCK on space and shape.</p> <p>Theoretical background about Space and Shape has been added</p> <p>Kotze (2007) discussed about teachers and learners conceptual understanding, learners' achievement on space and shape and do not related to the theory of teachers' knowledge.</p> <p>The article has been proofread and edited by professional proofreader to reduce and avoid grammatical errors</p>
	<p>Authors have to consider to rephrase the title since the content mostly covered the proposed conceptual framework for an instrument of Mathematical Content Knowledge (MCK) of Shape and Space. The word 'understanding' can be misleading with the content</p>	<p>The title has been rephrased and changed to "Developing Constructive Conceptual Framework of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape"</p>

	The first sentence is understandable and it can be changed to another better sentence that relate to teachers' MCK.	The first sentence has been changed into "Space and shape is one of geometry topics that should be mastered by students and require proper teachers' Mathematics Content Knowledge (MCK) for teaching to avoid misconception."
	The aim of this research is not consistent with the title; 'understanding' vs ' proposed conceptual framework'	The aim of the research has been revised and consistent with the tittle
	Research design is not clearly stated. The mixed method is not 'method of study' as claimed by the author, it should be the research design. If it is a mixed method, then authors have to indicate the specific design	The sentence for reearch design has been revised (line 18-20)
	Sampling technique should be stated	Sampling technique has been stated
	Please explain " described qualitatively". How the qualitative approach was conducted in this study?	This study used descriptive qualitative approach
	The term "very good" requires further explanation. State number of items that were generated at the final stage as well as at the initial stage.	The term "very good" represents 10 final items with consistent reliability coefficient 0.67
	Authors are required to add research implications at the end of the abstract	The research implications has been added in the end of abstract (line 27-28)
	Please add citation for " perfect teachers" since the said term is overclaimed by the authors. However, you may refer to any related references on classification of teachers knowledge such as Berliner, D. C. (2001). Learning about and learning from expert teachers. International journal of educational research, 35(5), 463-482	The term 'Perfect teachers" was mentiobed by Gearhart and Saze (2014). We add more statement related to it from reference Berliner, D. C. (2001). (line 36
	Authors should elaborate more on geometry rather than mathematics in general. The research background should also include the scenario of mathematics particularly geometry in Indonesia. Spelling error " mathematic".	We deleted the description about mathematics in general and elaborate more on geometry (line 46-55) and geometry teaching in Indonesia (line 56-59)
	More write up on geometry in space and shape should be included in this part	Geometry in space and shape has been more write up (line 48-54)
	The sentence does not support or elaborate points in the previous sentence from 51 and 52. Not related sentence.	The sentence has been deleted
	There should be a transition point between the last sentence (previous paragraph) and the first sentence (next paragraph)	This has been revised (line 59-60)
	Please provide citation for PISA 2022.	Citation for PISA 2022 is in line 50-54

	The term used seems inconsistent, MCK on Geometry or Space and Shape. Please be precise.	This has been revised
	I do not really agree with the term ' might be happened in Asia, therefore by providing empirical evidence will support the authors' claim.	This sentence has been deleted and replace with sentence in line 88-93
	The issue among mathematics pre service teachers is not strongly being addressed in this study. Why pre-service teachers and on what basis they are chosen. Explanation from these lines is inadequate	This issue has been written in line 90-93
	Authors claimed to aim at developing a comprehensive MCK, however only 15 items were developed, then please justify whether these items fulfilled to measure the required MCK?	The 15 items on space and shape developed are enough for comprehensive MCK since The framework of MCK items was influenced by some existing theories related to space and shape and elaborated with previous frameworks developed by PISA, TIMSS, and TEDS-M. (line 144-151)
	The term 'constructive components' requires a further explanation	We changed the sentence into "The study intended to develop constructive conceptual framework for measuring mathematics pre-service teachers' MCK in space and shape topic" (line 98-100)
	Please add subtopic of research design and justify the chosen research design as claimed by the authors in the abstract	The sub topic of research design has been added (line 117-128)
	I do not get the idea of ' Indonesian Senior' yet they were pre-service mathematics teachers. Please explain the term 'senior year', and how long their service in teaching as well as their professional development in taking the said courses.	We changed the sentence into "The participants were Indonesian mathematics pre-service teachers who were in the third year of study at State University in Java, Indonesia. They had already learned several concepts encompassing several professional/mathematics contents, pedagogical theories, and teaching skills" (line 130-133)
	Why 21 teachers, and any selection criteria for them to be part of this study? Any information on their demographic profile? Please explain	There were 21 Indonesian mathematics pre-service teachers determined using purposive sampling technique. (line 134-135)
	Authors are required to provide citation where necessary. Which model that authors refer in developing the framework and justify	Several citations have been added
	The 'existing theories' should be explained as one of the sub topics in between Introduction and Research Method	Theory about Space and Shape content has been added between Introduction and Research Method (Line 103-115)

	On what basis only 15 items were developed at the initial stage?	The basis is PISA and TEDS-M Framework
	Why there were only three variables and please justify with supporting citations.	The supporting citation added (line 152-154)
	Please provide at least one justification/citation for every single selection as claim by the authors.	Justification/citation has been added (line 155-167)
	Please provide information on the theoretical framework	More information about theoretical framework have been added (line 178-180)
	Please specify the number of mathematics education experts, their number of years' experience, credibility (academic background) and what were the countries involved as claimed by the authors	The specific information has been added in line 180-182.
	Why the translation was done by the mathematics educator and mathematics expert? State the specific translation technique, were back to back translation involved here? Provide supporting citation. How the authors ensure that the MCK was perfectly translated	The specific translation technique is described in Line 183-191
	On what basis that the elements of geometric were chosen? Was it based on a specific guidelines which has been provided by the Indonesian curriculum? Please justify.	The basis of the elements is described in line 191-193
	How the responses were developed? How the score points were given? Any experts involved at this stage? How did the authors get the agreement on these points? What was the duration set for the respondents to give their response? How the data collection process were implemented? Did the authors conduct a pilot study?	The scoring rubric is adapted from a reference (line 202) Explanation about pilot study (line 203-204) The explanation about work duration (line 204-205))
	Please be consistent with the term either "exploratory factor analysis" or "factor analysis". Provide justification of choosing the analyses and the information of the statistical requirement. Validation process was not clearly stated. What was the reliability value of MCK	We use Exploratory Factor Analysis. Investigation of choosing the analysis in line 213-217. The validation in this study is called face validation (line 180-182) The reliability value is 0.673 (line 231)
	On what basis that the deletion of item was based on the correlation values of less than 0.3? Please provide supporting justification	The supporting sentence added in line 232-235
	How the deletion items of MCK2, 4, 5, 8 and 13 were conducted? Did the authors consult with the experts?	MCK 2, 4, 5, 8, and 13 were deleted because of its correlation to the total score and the factor loading value of this items were less than 0.30 (line 233-235). We consult to statistical experts.
	Why Oblimin with Kaiser Normalization method was used in the rotation method?	the best way to decide between orthogonal and oblique rotation is to request oblique rotation

		(Oblimin) with SPSS (Tabachnick & Fidell, 2007)
	Please be consistent with the decimal points used in the article, line 198 the authors used 3 decimal points yet in table 3, 5 decimal points were used.	This has been revised and author used three decimal points
	Authors have to justify the items adequacy for each factor. Provide supporting citation.	The justification is in line 248-256
	How the factors were labelled?	The factor labelled based on the common characteristics of items such as described in line 220-225
	The percentage of preservice teachers' responses for each factor in the discussion part should be put under Results	The percentage of preservice teachers' responses for each factor in the discussion part has been put under results (line 301-311)
	Authors should add the discussion for the overall result; the pre-service teachers have the Factor 1 (figural representation) and Factor 4 (figural reasoning) below the overall mean score. F1 shows the lowest value and F2 (area and circumference of objects) shows the highest score. Then, it can be followed by the discussion of each factor	The overall result has been discussed in Discussion part (line 344-376)
	Please provide citations where necessary.	Citation has been added
	Refer to " with these three factors (F1, F2, F3 and F4), clear the mistake	We have clear the mistake
	What did the authors mean by the " cognitive behaviours" and how this differ/similar than/ with content knowledge	The terminology of "cognitive behaviour" has been deleted
	Authors have to provide evidence for the stated claim especially on the countries matters.	We deleted the claim about the countries.
	" For developing conceptual understanding", this sentence seems misleading from the given title. Were you referring to the content knowledge or constructive components?	The sentence has been revised and made it consistent with the tittle
	A subtopic of Research Implication is required particularly in terms of practices and theoretical aspects	Sub topic of Research Implication has been added (line 448-460)
	The Conclusion part should be elaborated further and proposed future works should be added	The conclusion part has been elaborated more (line 462-477). The proposed future works is in line 474-477
	Extensive literature reviews are required especially the current studies from reputable mathematics education journals as well as psychometrical journals	Thank you for the suggestion, we did the suggestion

Besides, all spelling and grammatical errors pointed out by the reviewers have been corrected and proofread by EIE Indonesia. Lastly, we do hope that this article can be published in Mathematics journal to contribute our research results to your journal.

Once again, thank you very much for your cooperation, help, and kindness. We do really appreciate your time and look forward to seeing your response.

Best wishes,
Rooselyna Ekawati

2nd round response:

Dear Reviewer,

Greetings from Indonesia and wishing you a great day with happiness and healthy condition in this era COVID-19.

First of all, I would like to thank you for allowing me to submit our revised manuscript entitled Developing Constructive Conceptual Framework of Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape with Manuscript ID mathematics-1491592 to Mathematics. We really appreciate the time and effort that you have dedicated to providing your valuable feedback on my manuscript. We are grateful to you for your insightful comments on my paper.

Furthermore, we have been revised the manuscript based on your comments, suggestions, and remarks, such as more information in the method section, comprehensive improvement in results and discussion, and the brief treatment of limitations of the study. We resume the revised manuscript in the table for responding to your comment, as follows,

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The discussion and conclusions are clear and include works on preservice teacher's knowledge, although again there is a lack of research regarding geometric knowledge. On several occasions the work has been difficult to understand due to errors in English grammar.	Related research on knowledge has been written in line 315. Regarding to Zilkova et al in Birel (2020), teachers' geometry knowledge due to geometric shapes and the characteristics were quite low.

	<p>Kurt-Birel, G. Analysis of primary school teachers' knowledge of geometry. International Electronic Journal of Elementary Education. 2020, 12 (4), 303-309.</p> <p>The article has been proofread and edited by professional proofreader to reduce and avoid grammatical errors</p>
--	--

Besides, all spelling and grammatical errors pointed out by the reviewers have been corrected and proofread by EIE Indonesia (the certificate attached). Lastly, we do hope that you can recommend our paper to be published in Mathematics journal to contribute our research results in this journal.

Once again, thank you very much for your cooperation, help, and kindness. We do really appreciate your time and look forward to seeing your response.

Best wishes,

Rooselyna Ekawati

Third round of review response :

Dear Prof. Casper Xie
Editor of Mathematics

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Furthermore, we have been revised the manuscript based on your comments, suggestions, and remarks, such as more information in the method section, comprehensive improvement in results and discussion, and the brief treatment of limitations of the study. We resume the revised manuscript in the table for responding to your comment, as follows,

Reviewer's Comment	Respond to Reviewer
1. The paper was submitted to similarity checking by Turnitin and the result was 28% which is rather high. Please do paraphrases for some sentences in order to reduce the percentage.	We paraphrases several sentences to reduce the similarities
2. Line 119: please provide justification for the mixed method research design and state the specific type of mixed method.	The justification about mixed method described in line 119 to 130
3. Line 131 and 132: the 'senior' term is missing which is not consistent as mentioned in the abstract.	We deleted the 'senior' term in abstract and made it consistent with the explanation in method
4. Line 216: the scoring rubric should be explained in line 208.	We add explanation about scoring rubric in line 205 to 208
5. Line 241 and 247: the decimal numbers are not consistent with the rest of the values.	We made the decimal number consistent for all page 7 (line 224 to 247)
6. Line 262: the symbol ',' should be replace by '.' for the value of p.	We did replacement for the symbol to show value of p
7. Line 253: the justification of choosing Oblimin with Kaiser Normalization method was used in the	The justification for choosing Oblimin with Kaiser Normalization method is described in line 251 to 257

rotation method should be stated in the text.	
8. Line 457: "there is a potential implication" should be explain further.	We add explanation about potential implication in line 455 to 460
9. Line 465: "more pre-service teachers' programs are needed", please specify or provide examples.	We have revised the sentences in line 464 to 468
10. Line 516: provide the translation of the title.	The translation of tittle has been added in line 518
11. More references from 2021 are required to support the content of the articles.	We add more references from 2021 from reputable journals

Besides, all spelling and grammatical errors pointed out by the reviewers have been corrected and proofread by EIE Indonesia (the certificate attached). Lastly, we also attach a similarity check result from our article with a score of **18%** by using iThenticate (the results attached) with several parts that come from Mathematics' template and references. We do hope that this article can fulfill the standard article to be published in Mathematics journal to contribute our research results to your journal.

Once again, thank you very much for your cooperation, help, and kindness. We do really appreciate your time and look forward to seeing your response.

Best wishes,

Rooselyna Ekawati



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Developing a Constructive Conceptual Framework of a Pre-Service Mathematics Teachers' Content Knowledge Instrument on Space and Shape

Authored by:

Roselyna Ekawati; Masriyah; Abdul Haris Rosyidi; Budi Priyo Prawoto; Rully Charitas
Indra Prahmana; Fou-Lai Lin

Published in:

*Mathematics*2022, Volume 10, Issue 1, 137



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Basel, October 2022