Response to Reviewer 1 Comments

First, thank you very much for your review comments. This allowed us to clearly recognize the shortcomings of our paper and make changes.

Point 1: the authors have conceived their activity on the creation of an algorithm that already exists in the most used GIS software（why did you decide to write a new algorithm? Every GIS software includes this function）

Response 1:

We are very sorry to have overlooked that there should have been some comparative discussion of the method with existing location analysis methods. Thank you for your suggestion. We have added a description of the comparison of this approach with existing location allocation models in both the Related Work section and the Discussion section.

In this paper, we focus on the siting of rural public cultural spaces. We classify rural public cultural spaces into three types according to their organizational relationship with villages. Different siting analysis methods are proposed for the three types of spaces. This analysis of village siting for a multi-village concentration is more like a location allocation problem. We tried to use the location allocation tools in GIS for their siting analysis in the early stages. Although these tools work very well, and the analysis is much faster. Unfortunately, since it is an integrated tool, it cannot be adapted to our needs. For example, these tools are unable to filter the maximum value of the shortest path distance to the central village in each group and to select the appropriate K value based on this value. Moreover, there are many factors that influence the study of the location of public cultural spaces, and this analysis is only used as a reference for planning. Therefore, we hope to output multiple results for better use as a tool. However, these GIS location allocation models are not as flexible due to their single output. Therefore, considering the above reasons, we decided to write a new path-clustering algorithm based on k-means algorithm logic. Although the output is relatively similar to that of the location allocation method in GIS, there are certainly many differences. The algorithm is not as highly encapsulated as the location allocation method in GIS. It is more flexible and easier to meet our needs.

Point 2: Nothing says about the criteria for choosing the villages considered to host the centers
Nothing say about the choice and classification of paths, distances considered and means of transport

Response 2:

It is true that this part is not mentioned in this paper. In this paper, we propose a site analysis method for public cultural spaces and test the method with Yumin Township as the research object. We focus on describing the implementation of the analysis method and the results it produces. At present, the method still lacks practical application tests. The future work we need to do is to apply the method to realistic situations so that more realistic factors can be depicted. We are currently in the initial stages of studying the topic of rural public cultural spaces. Although some data have been collected, they are not yet sufficient to support the validation of the practical application of this

method. Therefore, in this paper, we focus on the description of this analysis method itself. We have explained this content in the discussion section of this paper. Thank you for your comments.

Point 3: line 16 the first time an acronym is used, it is necessary to specify its significate

Response 3: Thank you for pointing this out. We have fixed this error.

Point 4: line267 How did you set this value/ **Point 6:** line 308 How do you expect it to be travelled?

Response 4 and 6:

Since this paper focuses on the description of the analysis method, only two values, 5 km and 6 km, are selected in the article to illustrate the results. This path distance and people's choice of travel mode can be obtained by the stated preference method. After your reminder, we added a description of the method used to obtain these data and cited the relevant literature.

Point 5: Figure 8 which kind of Paths did you consider? A classification of these paths can be very useful. It think they are not all the same. They probably have different practicability for walkers and bickers

Response 5:

This is one part that we truly neglected. Since there is no clear road classification system in the countryside as there is in the city, we did not consider the differences between roads at first. After your reminder, we have reconsidered this problem. It is true that the algorithm is currently unable to classify roads. We explain this problem in the discussion section and note that we will try to address it in future work.

Finally, thank you for your comments. We can see that these comments are more focused on the practical application of this method. This is something that is currently lacking in our research. In the future, we will add this aspect to our research. Thank you for all your hard work. It makes us realize our shortcomings and gives us a clearer picture of the work ahead.