

The Outreach Activities of GEBCO for Young People with Puzzles and VR

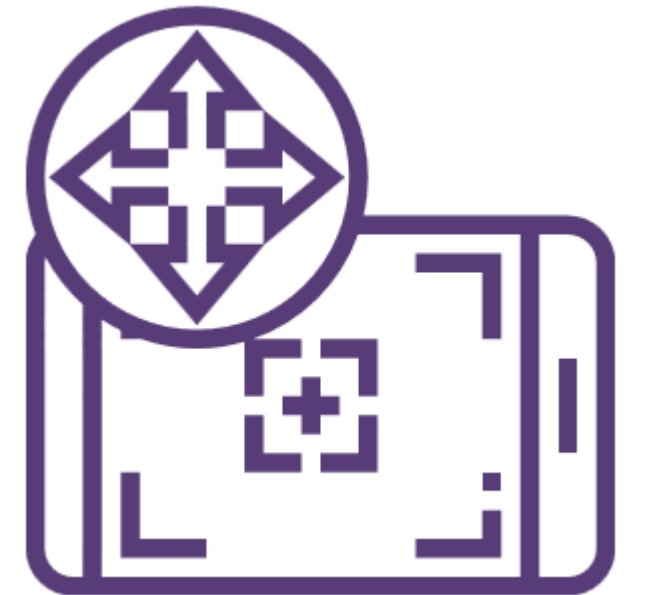
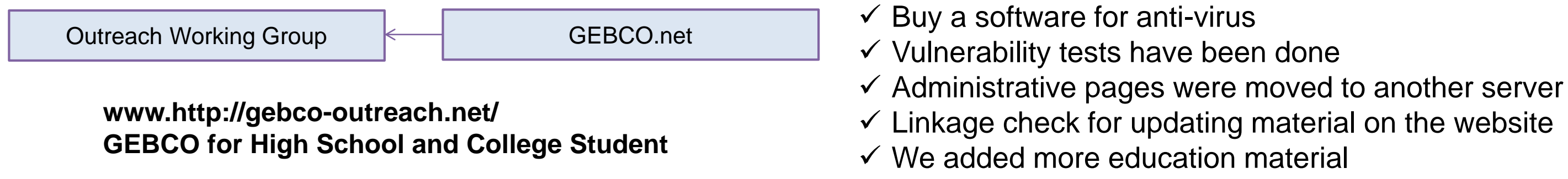
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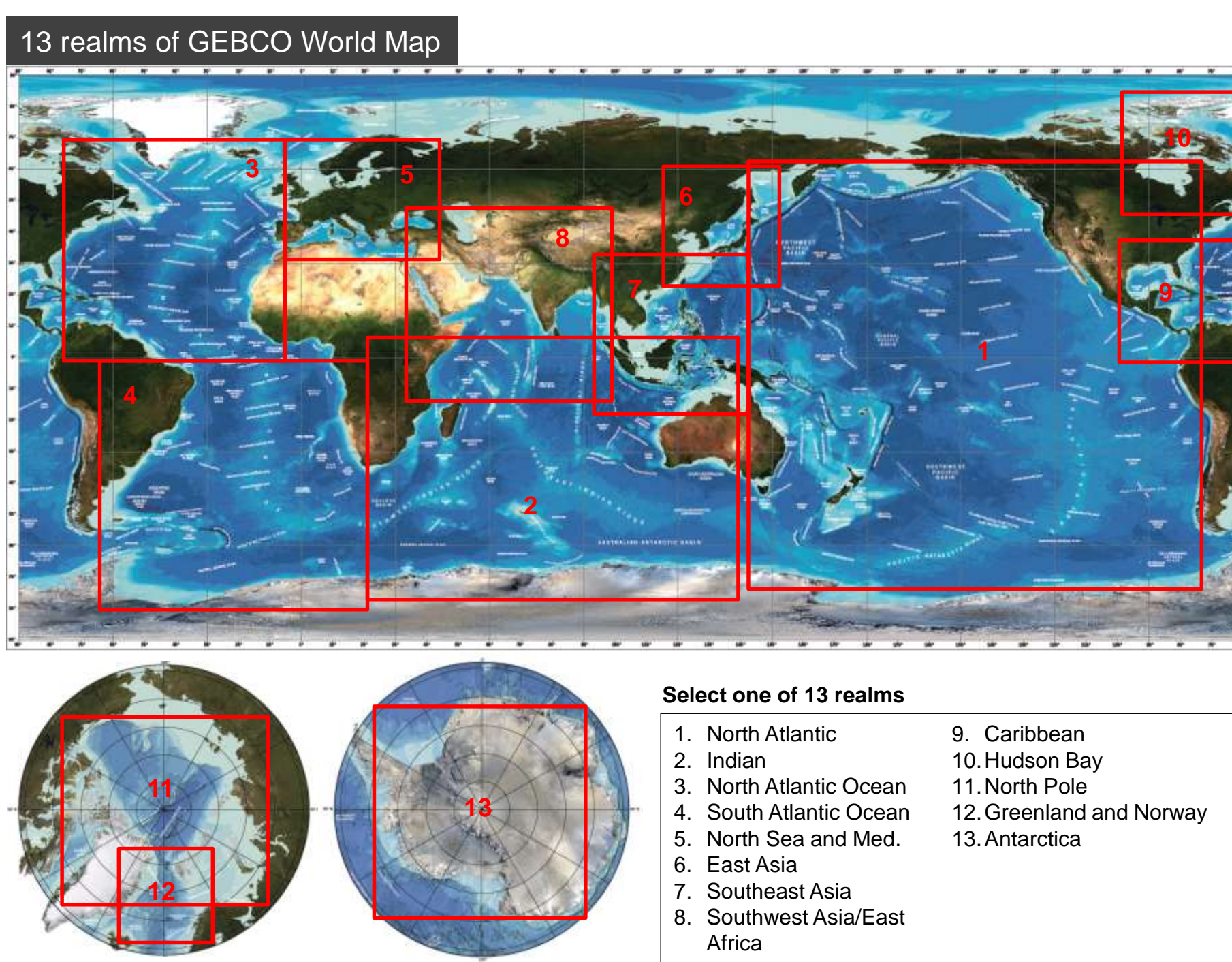
- GEBCO has discussed the importance of outreach activities for GEBCO including IHO (international hydrographic Organization). There was also doubt that the outreach activities of GEBCO were not effective as far as IHO do not have any outreach group or plan for the IHO activities. But we have established outreach working group under GEBCO and have run an outreach subpage of GEBCO and filled various contents related to students and teachers. Targets of outreach activities were clearly defined and strategies were also discussed in GGC meetings. Here we would like to show a simple game for students to play GEBCO world map.
- We have developed GEBCO world map puzzle. The purpose of the game is to recognize three facts. Oceans have different shape and depth like land. The second fact is ocean is larger than fragmented lands. Finally, students will have more detailed information from the GEBCO outreach site than before the playing the game. Sliding puzzle of GEBCO world maps can be manipulated via internet whether personal computer or mobile phone, as it is called, web-app hybrid version or responsive web technique.
- The second trial is to utilize virtual reality techniques. There were many contents in Google Ocean where many video and photo on under the sea, but not real VR experience. If the image of "one ocean and multi-application" is recognized using smartphone after downloading app. Then the gray whale is moving on the phone, other observer can take a picture on that. It is a just trial for us to apply the ICT technique on issue of Marine affairs. Further applications of VR, AR or Mixed reality will be developed in the consideration of the effectiveness of the games for education purposes.

1. Outreach web site for students

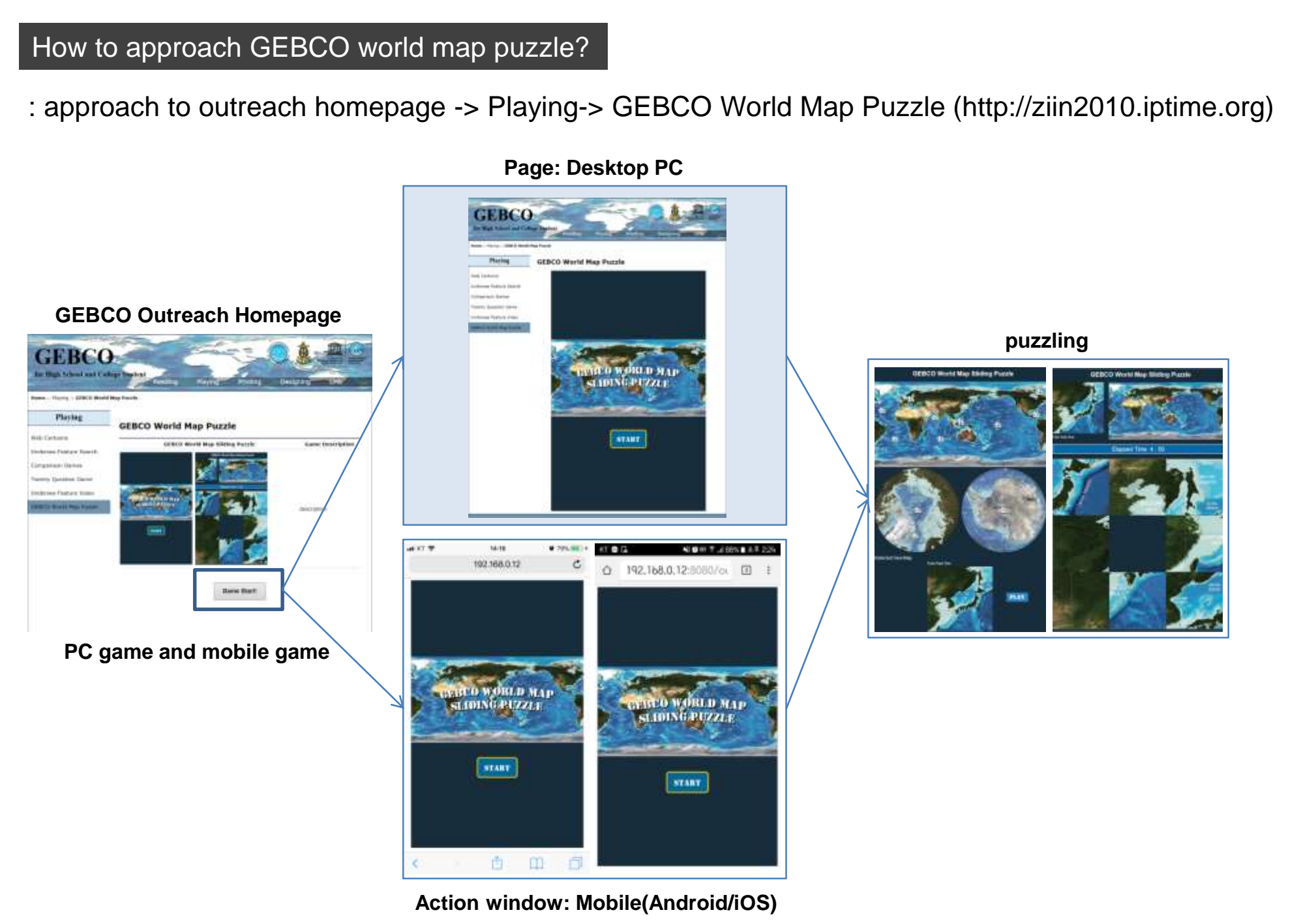


2. GEBCO World Map Sliding Puzzle

2-1. 13 realms of GEBCO World Map

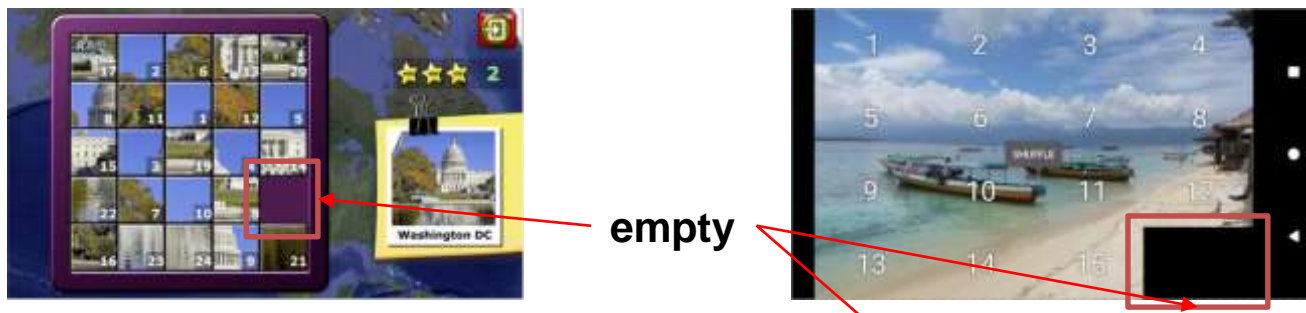


2-2. How to approach the puzzle

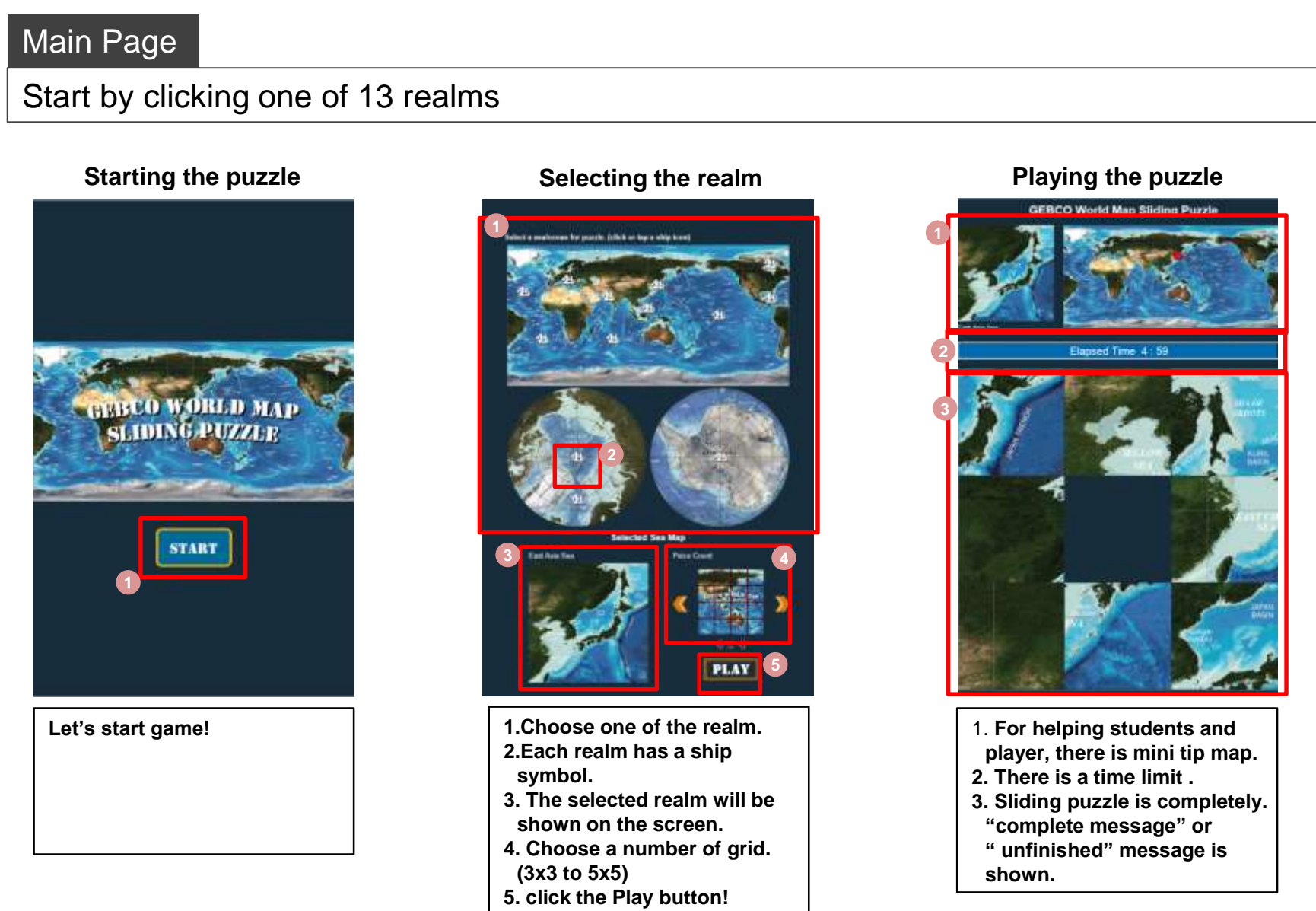


What is Sliding puzzle?

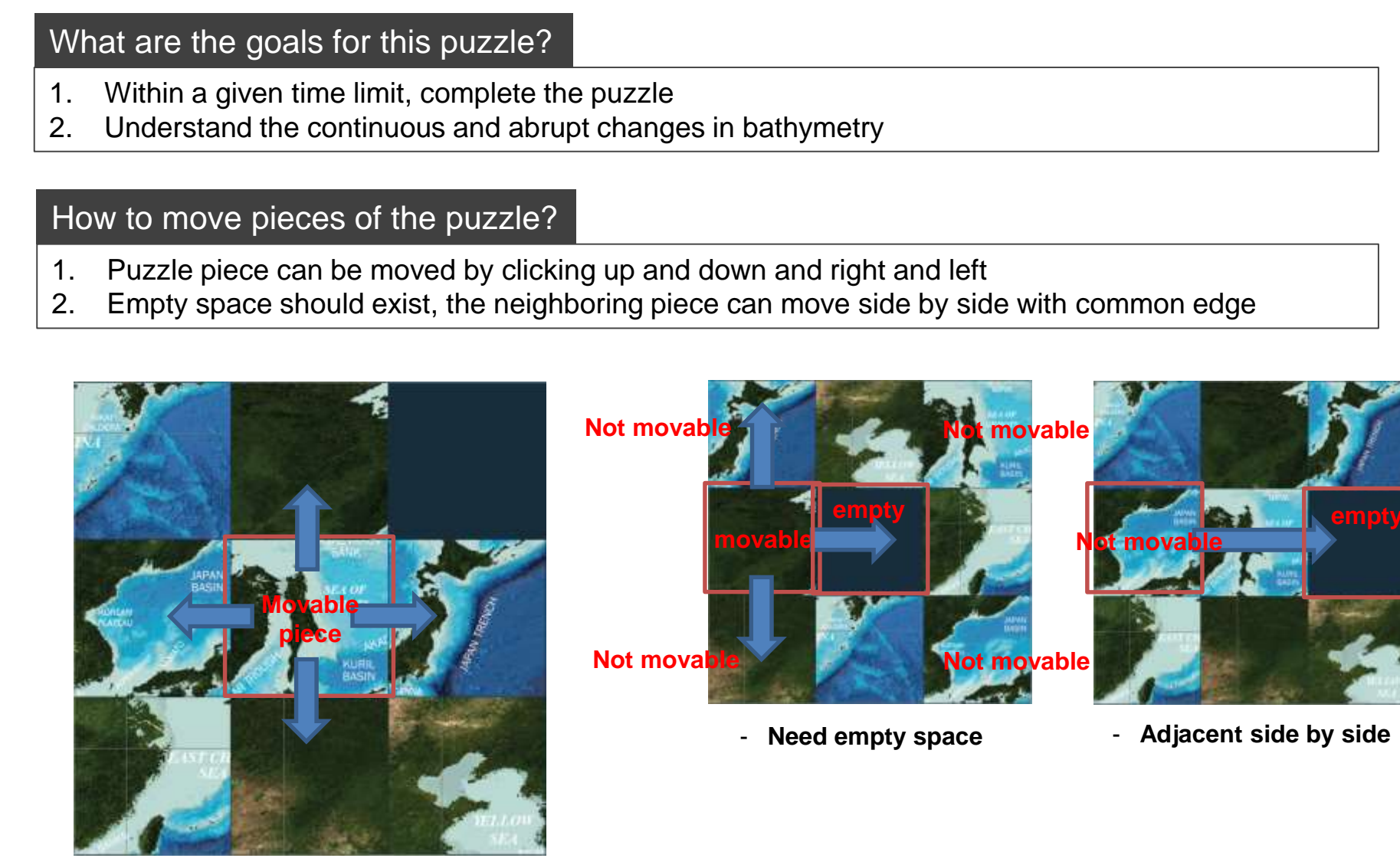
a combination puzzle that challenges a player to slide (frequently flat) pieces along certain routes (usually on a board) to establish a certain end-configuration. The pieces to be moved may consist of simple shapes, or they may be imprinted with colors, patterns, sections of a larger picture



2-3. Description of the puzzle UI



2-4. How to play the puzzle



3. Experience of VR

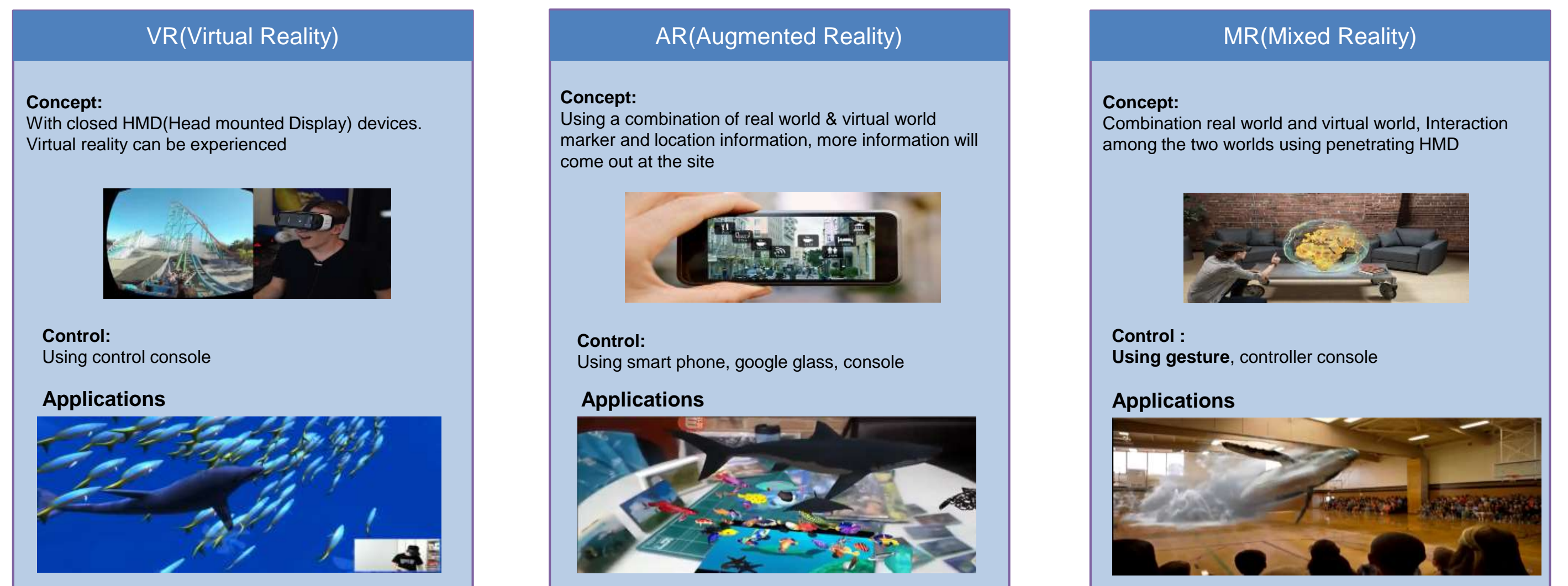
Experience of VR under the sea

: <http://www.khoa.go.kr/seaVr/ko/vr.html?type=type13>
More information can be attached to icons and markers.



4. Virtual Reality, Augmented Reality and Mixed Reality

VR AR Mixed Reality



5. Further Applications of New Technologies

Further Applications of New Techniques



Eurostar : immersive experience
Eurostar travelers can explore the sea floor around them



Sunkenus the hidden object VR game
that takes students under the sea

When we have collect all the bathymetric data of the earth, we will be able to use in making games in order to get used to marine environments with fun.

6. Conclusion

We have developed Sliding Puzzle with GEBCO world map. The sub regions can be used for those who have different interests. Distractions in the classroom may be a concern but it is necessary for us to attract students who are familiar to internet and digital environment. Playing the games is one of the communication methods in the future.

We checked the VR applied contents using the bathymetric data and textures and models. People will experience under the sea with manipulation of mouse. In the console games or MMORPG games, additional stories are needed to have people enjoy the data.

Scientific visualization is other issue after the collection of seabed data. It is worth parallel efforts for outreach activities to share the values of bathymetric data and the potential applications.