（　）　　　　2　　　　　　　　　5　　　　25
　　　　　　　　　　15　　　　75　　　　　100
（　）

（　）

　　　　　　　　　5　　　　5　　　25

1. mental model

2. Toulmin's argumentation model

3. 　　　　　　　　　　　　　　association

4. PBL

5. 　　　　　　　　　　　　　　　　(epistemology)

　　　　　　　　15　　　　5　　　75

1. What are the potential benefits of integrating history of science into science teaching? Which one of the benefits probably not be found through the use of typical textbooks? Please explain your reasons why this benefit might not be resulted from the use of typical textbooks.　(You may get more credits if you can include the literature you have reviewed in your explanations)　15

2.

　　　　15

3.

　(1)　　　　　　　　　　　　　　　　　　　　　(4　)

　(2)　　　　　　　　　(　　　　)　　　　　　　　　　　(4　)

(3)   (4   )

(4)   (3   )

4.   Journal of Research in Science Teaching

One of the difficult transitions for new secondary science teachers is that from novice teacher to master teacher. Often this process involves the novice in adopting survival strategies for teaching rather than those advocated by the National science education standards or the *Project 2061 benchmarks*. This study reports on an instrument that has been shown to be useful in helping novice teachers reflect on and change their science teaching praxis. Based on the interpretation of this case study, it appears to have the potential to significantly affect the development of secondary science teachers by providing a readily accessible model of instruction that aligns with student-centered models of instruction advocated by the *Standards* and *Project 2061*.

(1)   (5   )

(2)   (10   )

5.   (qualitative paradigm)   (quantitative paradigm)

15