1. **Does it behave like as what we intended?**
   (a) When it is doing an intensification, it does not wander around too far.
   (b) When it is doing a strong diversification, it does not coming back to previously visited regions but arrive at an unexplored region that has some potential to contain good solutions.
   (c) When it is designed to search around 'Big Valley' region, it does not wander too far from that region.
   (d) When the search landscape is very rugged, it does not attempt to escape from a local optima by its own strength but rather doing aggressive diversification.
   (e) Problem specific behavior: when the strategy is to focus on interchanging short edges in TSP tour, it does not choose many long edges.
2. **How good is the local search in intensification?**
   (a) Does it have sufficient exploration within a local neighborhood?
   (b) Does it stays around good region 'long enough' before it attempts to make escape moves from that region?
   (c) If the intensification is not good, the local search may find a better solution sometime later in the future after revisiting the same region A visited in the past just because it didn't intensify enough around that region A previously.
3. **How good is the local search in diversification?**
   (a) Does it make successful non-local moves to previously unexplored parts of the search space?
   (b) Does the diversification ever manage to lead the search to find new (hopefully better) best found solution or even to find the global optima? Note that most of the time diversification will fail to bring the search to good region as stochasticity of diversification usually destroy good elements of the current solution.
4. **Is there any sign of cycling behavior?**
   (a) The obvious one.
   (b) The non-obvious one, e.g. diversification to the same region that was searched long time ago, a long 'circle', harder to spot.
5. **How does the local search algorithm make progress?**
   (a) Progressively narrowing the search region to the region around the 'Big Valley'.
   (b) Doing active diversification whenever the search trapped in an attractive local optima.
   (c) etc
6. **Where in the search space does the search spend most of its time?**
   (a) In good region? (e.g. solution quality of solutions visited around that region is $< 5\%$ off from best found value).
   (b) In bad region? (e.g. solution quality of solutions visited around that region is $> 5\%$ off from best found value).
   (c) In region far from the region that contains best known? Is the finding of the best found solution is more by luck or because the search is progressively narrowing its search into it?
   (d) In region near the initial solution? A very poor local search may not even able to escape from the first local optima...
   (e) In a 'nasty' local optima region? The search is progressing well until it arrives at a particular local optima region, and then after that, it stuck there forever...
   (f) etc
7. **What is the effect of modifying a certain search parameter/component/strategy w.r.t the search behavior?**
   (a) Better? (e.g. the new local search run now manages to find a better best-found value, it now concentrates on a 'better' region, etc)
   (b) Worse? (e.g. the new local search run now does not manage to find previously found best-found value, it now diversify too much from a good region, etc)
   (c) No difference? Sometimes, the effect is not obvious, is the local search quite robust to manage such changes?
8. **How far is the starting/initial/greedy solution w.r.t the global optima/best known solution?**
   (a) Far? The greedy construction (initial) heuristic is not good or the characteristics of good solution are not known.
   (b) Close? The greedy construction (initial) heuristic is already quite good.
9. **Does the search quickly find the global optima/best known solution region or does it wander around in other regions?**
   (a) The search is quickly focusing on promising region and it is just a matter of time before it eventually arrive at the best found solution.
   (b) The search arrive at the best found solution nearing the end of the search, is it by luck?
   (c) The search arrive at the best found solution early in the search and no new best found solution is found anymore for the remainder of the search... Can we do better by utilizing the search history and/or problem specific information?
10. **How wide is the local search coverage?**
    (a) Are there any good anchor points (obtained from other runs) that are missed by the current run?
    (b) Are those missed anchor points good ones or bad ones? If bad ones are missed but good ones are searched, the local search is doing well. Otherwise, it is a bad search...
11. **How do two different algorithms compare?**
    (a) Same local search M, different configuration ϕ_1 and ϕ_2.
    (b) Same local search $M + \phi$, same run, but at different iterations/time point t_1 and t_2.
    (c) Same stochastic local search $M + \phi$, different runs, run_1 and run_2.
    (d) Different local search M_1 and M_2, with different ϕ_1 and ϕ_2.
    (e) The comparison of local search behavior (the other 10 questions above) may yields useful insights...