How To Break Out Of The Same Old Routine Of Bad Quality

By Randy Slade
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Lessons Learned

How many times have you finished testing on a release and said “Boy, I never want to go through one like that again”. Or have you ever had a project canceled and said “If only I would have known at the beginning, what I know now, I would have done things a lot differently”. Or when you finished testing on release 1, said “next time I want to do it differently”, then said the same thing on releases 2, 3, and 4?

If any of these thoughts resonate with you, then I think you will be interested in the Lessons Learned process. Lessons Learned is a powerful post-mortem process that can be used at the end of a project, phase, or deliverable to evaluate how things went, and what could be improved. Lessons Learned can be used to evaluate: a process; a completed project; a completed phase; a project failure; or any event that you want to improve or not repeat. Its purpose is to help you make incremental improvements in your processes that will lead to continually higher quality. After 30 years in of developing software systems, I have become a real believer in incremental change. Rarely does it work to change everything at once, but you can make small improvements each day and over time they add up to significant improvements.

I was first exposed to Lessons Learned as part of the Total Quality Management (TQM) process. There is formal training available on the Total Quality Management process but it is time consuming and expensive. Most of the places where I have worked, I have had to take the Lessons Learned process, abbreviate it so it will work for people who have not had the full TQM training, and fit it to the local corporate culture. Here is an overview of the process I have used with a variety of groups who were not already trained in the Total Quality Management process:

- Involve representatives from all groups that participated in the event you wish to improve: developers; users; testers; technical writers; configuration management; data base administrators, etc. At times it may be appropriate to have a separate session for just one team.
- Provide ground rules for the session that will guarantee confidentiality and mutual respect.
- Brain storm what worked well. This is important because you want to try to repeat these things in your next software release, or make them part of “the way we do business”.
- Brain storm what didn’t work well. This is where most of the time, energy, and attention will be focused. It also has the biggest potential for improvement.
- Eliminate duplicates.
- Group by category.

- Clarify for meaning (as needed)
- Prioritize the problems using multi-voting. Multi-voting is a process which helps us decide the highest priority items on the list of things that need improving. It gets the long list down to a workable number of "big hitters".
- Document the results.
- Identify one to three problems to work on. Set up separate sessions to: identify the root cause of the problem; brainstorm solutions or mitigation strategies; develop a complete plan to improve this item for next time. In the plan, be sure to include a rollout process, a periodic evaluation of the solution(s), and additional corrective steps if necessary.

When I was working at a large utility in Northern California, the testing manager asked for help in solving some of the frustrations and problems his testing group was having. He asked me and another consultant to identify the problems. We decided to use what evolved to the version of Lessons Learned that I am sharing with you today. After a couple of years it became a part of the organizational culture and was a regular part of the way they do business.

Lets divide the process into two parts. The first part is the identification of what should be changed. The second part is coming up with a plan to identify the appropriate changes to make, and the implementation of that plan.

Lets discuss part one, the identification of what should be changed. I've outlined the process above but now we will talk about it in more detail. Start planning the Lessons Learned session by identifying who should be invited to attend. Basically everyone who was involved in the process should be invited. If that is too many people (200 is too many!), then invite representatives from each group that was involved. There is no hard and fast rule on how many is too many or too few. I have done these sessions with groups that ranged from 3 to 20 people. I think the groups of 7 to 12 work best for me, but I have seen it work with groups as large as 20. You want everyone to participate but you want it done with some semblance of order, and you need to be able to follow the process if you want to finish with a good product.

Here are some tips on getting ready for the Lessons Learned session.

If you invite representatives, they need to be people who are respected and well thought of by their work group and peers. If they don't have credibility, then the output from the process will not have credibility.

Limit the session to 2 (two) hours in length. People can usually stay focused and high energy for 2 hours but much longer than that and you start to lose them. It is better to have multiple meetings than to drag it out until they are willing to agree to anything just to get out of the room. Let them know up front "we may not finish everything in this meeting but if we don't we will still cut it off after 2 hours and decide at that point what to do next." You are asking them to commit to following the process. You are asking them to be focused for 2 hours. In return you are promising them that you will not go

beyond the 2 hours that you have asked them to commit to. If you are to establish credibility and trust, you have to keep this commitment to the participants.
Have treats. If it's morning have coffee and donuts, mid-day have snacks or cookies. Even if you have to pay for it out of your own pocket it is worth it. It helps to create the environment you want for the session as one of trust and appreciation.
Have two leaders for each session, and someone to take notes if possible. It is too much for one person to do all alone so you need a minimum of two people to run a Lessons Learned session.
Schedule the Lessons Learned session on a different floor or in a different building than the normal work location. This will limit or eliminate interruptions, distractions, observers dropping by, etc.
Send out a meeting notice in advance. In it tell the participants what the topic of discussion will be. Ask them to come prepared to discuss what worked well and what they would like to see improved. If the participants will be representing a work group, ask them to get input from their team as to what worked well and what could be improved. The meeting notice should have an agenda for the meeting. You want to set the expectation up front that the Lessons Learned sessions have a formal process that will be followed. As pre-meeting material you could also send out the "Ground Rules" and an outline of the Lessons Learned Process. It may not make a lot of sense without further explanation, but it will give them some idea of what to expect.

A sample agenda would look something like this:

Lessons Learned Agenda

11/2/2001
2 Hours
Conference Room away from the work place

Meeting called by:	Randy Slade	**Type of meeting:**	Lessons Learned
Facilitator:	Randy Slade & another	**Note taker:**	Hopefully have help

Attendees: 6 to 20

Please read: Ground Rules and Lessons Learned Process

----- Agenda Topics -----

Purpose of the meeting	Leader	11:00 to 11:10
Introductions	All	11:10 to 11:20
Review of the Process to be used	Leader	11:20 to 11:30
Brainstorm "What Worked Well"	All	11:30 to 11:50
Eliminate duplicates and catagorize	All	11:50 to 12:00
Brainstorm "What did NOT work well"	All	12:00 to 12:30
Eliminate duplicates, catagorize	All	12:30 to 12:40
Multi-vote	All	12:40 to 12:50
Next Steps	Leader	12:50 to 12:55
+ and - on this meeting	All	12:55 to 1:00

Other Information

Special notes: Lunch will be provided

Ground Rules

Ground rules for the Lessons Learned sessions are as follows.

1. Keep in mind that we may not finish everything on the agenda today, and that is O.K.
2. All participants are expected to provide unique contributions.
3. If there are observers, they are to observe and may not participate.
4. This is a safe environment where we are free to speak candidly. What is said will not go out of the room or be attributed to any individual unless it is mutually agreed.
5. Treat each other with respect:
   - Don't rush participants' questions or answers.
   - Allow a speaker to finish before you begin talking – one speaker at a time – no side conversations.
   - Critique *ideas* not *people*.

6. Minimize interruptions (leave pagers and phones off, do not come in and out of the meeting, do not allow others to come into the meeting and interrupt).
7. It's important to say "I don't know" or "I don't understand".
8. Get agreement before straying from the agenda.
9. Don't hold back constructive questions or comments. Don't be afraid to take unpopular positions.
10. Share responsibility for holding each other to the meeting ground rules.
11. Keep a sense of humour.

Sample Lessons Learned Process Handout

1. Brainstorm using Post it notes.
2. List what did work well (what do we want to make a part of the way we do business and incorporate into our next process)
   - Eliminate duplicates
   - Group by categories
   - Clarify meaning as needed

3. List what did not work well (what do we want to improve for next time)
   - Eliminate duplicates
   - Group by categories
   - Clarify meaning as needed

4. Identify highest priority items that did not work well using the multi-vote process.
5. Develop Next Steps
6. Evaluate how this work session went (+ and -)

Conducting the Lessons Learned Session

You have completed all of the pre-meeting work and the time has come for the Lessons Learned Session. Greet everyone as they arrive, introduce yourself if you don't know all of the participants. Try to start the session on time. It is important that they realize from the beginning this is a process that you will all be following for the next two hours. Review the agenda and tell them that there is a lot to cover so we all will need to be focused for the next two hours. We may not get through it all and if we don't that is O.K. Review the Ground Rules for the meeting. Explain that the Ground Rules will help keep them on track, maximize productivity, and help maintain an environment that encourages open discussion while maintaining confidentiality and mutual respect. Review the process to be used. Ask if all of the participants have done brain storming before. Remind them that the purpose of brainstorming is to generate new ideas, to help find new ways of looking at the problem. Remind them at in brainstorming we don't criticize or judge other peoples ideas. There are no right or wrong answers in brainstorming. We only ask for clarity when we don't understand someone's idea.

Facilitator's Role

We should talk about the role of the facilitator. The facilitator plans the Lessons Learned session, conducts the session, and publishes the results of the session. The facilitator is there to facilitate, not to participate. The group makes the decisions; the facilitator only runs the meeting and keeps them on track with the process. The facilitator does not participate in the discussions, and does not contribute ideas.

Brainstorm "What Worked Well"

Give each person a pad of sticky notes and ask them to start writing:

- one idea per note
- it should be a complete thought that can be understood by others
- nothing is too small or trivial
- it should be something that they thought worked well, something they would like to repeat in future projects

As they write, the meeting facilitators can collect the stickies and put them up on a white board or large wall. You can kind of group them together as particular patterns begin to emerge, like put the documentation ones together, or the testing ones together. After the participants are all through writing stickies, you can review the groups you have started to create and have the participants decide how they should be grouped and what the groupings should be called. If the participants want to call documentation "written stuff", let them, they make the decisions.

For some reason, it is often hard to get people thinking about what worked well. This is especially true if it has been a difficult experience, like the project was cancelled or was declared a failure. Use the process to take the emotion out of the experience. Remind them that there are things that they will want to repeat next time they do a project like this. Or it could be things that they want to make a part of the way they do business.

Provide them with examples of things that could be viewed as positive. Some examples might be:

- Eventually we did finish the project.
- They finally canceled the project.
- The food at the pink slip party was very good.
- They brought food in to us on all those Saturdays we had to work.

After the brainstorming is completed review the results. Read all of the comments out loud. Take a moment to celebrate the really good things that happened. Remind people to ask for clarity if they do not understand any of the comments. Quickly group the comments and label the groupings. This list of things that worked well will be part of the final documentation output from the Lessons Learned session.

Brainstorm "What Did Not Work Well"

Now that we have celebrated the positive things that happened, we can focus on the things they want to improve. Ask the participants to do the same brainstorming with yellow stickies, only this time for things that did not work well, or things that we do NOT want to repeat next time. They usually do not need a lot of coaxing to come up with the negative things. This list is usually several times longer than the list of what went well.

Give each person a pad of sticky notes and ask them to start writing:

- one idea per note
- it should be a complete thought that can be understood by others
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As they write, the meeting facilitators can collect the stickies and put them up on a white board or large wall. You can kind of group them together as particular patterns begin to emerge, like put the documentation ones together, or the testing ones together. After the participants are all through writing stickies, you will review all of the stickies to make sure that they are clear and understood by all. As you do this, remove duplicates and combine ideas that are similar and seem to go together. Then put them into groups and have the participants put a name on each group.

Multi-voting

To do the prioritization of the items, you are going to use a process called "Multi-voting". Multi-voting can reduce a large number of items down to a manageable few, usually three to five. Here are the basic rules of multi-voting:

- Everyone gets the same number of votes.
- Each person will cast all of his or her votes.
- They will vote for the item(s) that they think are most important, the ones they want to change most.
- They can cast 1, 2 or any number of votes for a single item. Or they can cast one vote for several different items.

The facilitator will need to figure out how many votes each person should get. It seems easier if everyone gets lots of votes. I usually figure that they should get one vote for about every 6 items. So if there were 50 items, each person would get 8 votes. If there were 100 items they would get 16 votes. It is really kind of an art form more than a science so see what works for you. One time when I was conducting the multi-voting part of a Lessons Learned session everyone groaned that they didn't have enough votes to vote for all of the really important items. At that point I gave them all three additional votes and all of a sudden their decisions seemed much easier. Use what works, don't be too rigid, be willing to try something new as long as you don't stray too far from the process. This is part of adapting the process to what will work in your unique work environment. I usually have them go up to the whiteboard and put a stroke tally next to each item they are voting for. If the group is small enough you can give them each a different colored marking pen in case you end up with more or less votes than you should have. Give them 5 minutes to come up to the board and vote for the most important items. At the end of five minutes the facilitator should go up and list the items that received the most votes. In my experience, usually one, two, or three items rise to the top in votes, then there is a natural break and the rest fall below that top tier. You usually end up with three to five groupings based on natural breaks in the votes.

Next Steps

If you have stayed on track time-wise, it is time to discuss next steps. The next steps are a discussion of what will happen next. If you completed all of the brainstorming and multi-voting the next steps are usually:

- Publish the results of this Lessons Learned session to the participants.
- Accept feedback on any items that participants would like wording changes or even dropped before the results are shared outside of the participant group.
- Explain where the final results will be shared, how wide they will be distributed.
- Discuss any plans for sessions to develop strategies to resolve the highest priority problem areas.

If you did not complete all of the brainstorming and multi-voting, develop steps to continue the process and complete these activities. In the past we have done things like schedule another session, have people vote via email, and select a small group to re-word a sensitive item.

Evaluate this meeting + and –

Since Total Quality Management is about continual improvement, you will want to evaluate how the lessons learned session went. For Lessons Learned to be successful over time, you need to continue to improve the process you are using. I usually use an easel and put a plus (+) on one side and ask them what worked well for the session, what did they like, what would we want to include in future sessions. After receiving all comments on the plus side, I put a minus (-) on the other side of the easel and ask them what they would like to see changed for the next Lessons Learned session, or what should we do differently next time.

Develop Action Plans to Make Improvements

Remember at the beginning of this talk I told you of a testing manager who asked me to help identify the problems and frustrations his test team was feeling? After a very successful Lessons Learned session he assigned the top ten problems out to his team leads to fix. He did not think there was time to work on the Developing Action Plans part of the program. A year later we came back and conducted another Lessons Learned session with the test team. The manager was disheartened to see that the same problems that were are last years' list were also on this years' list. That year he asked us to go ahead and try the Develop Action Plans process for one problem to see how it worked. We identified one problem that was high priority and that people wanted to fix. It went well, people saw that they could change things, and the program took off. The lesson to be learned here is to treat the steps to make improvements like a project. Do not under estimate the need to plan and implement it well. TQM suggests the PLAN, DO, CHECK, ACT model, so we will show how that model can be applied here.

There is always a lot of resistance to change and reluctance to try something new. I suggest that you start by identifying one problem to work on. Select a team of energized, interested people who participated in the Lessons Learned session and are from the work groups that will be most involved in the change. Use the same pre-meeting tips as were found in the Lessons Learned area. Send out an agenda ahead of time, schedule the meeting away from the immediate work area, determine who should be invited, etc. Be sure that management realizes that this part of the process will take several meetings over a period of weeks or months before the team will be ready to implement the desired changes. Too often this activity is underestimated. I can't tell you how many times the manager has said, "I know what needs to be done, you just need to get them to realize it". If it was that easy it would have been fixed a long time ago and we wouldn't have it as the number one problem on our list.

You can have multiple teams working on solutions to different problems, but each team should only be working on one problem.
In the first meeting set the expectation that this will take several meetings to:

- Clearly define the problem.
- Gather information about the problem.
- Clearly identify the root cause of the problem.
- Develop possible solutions.
- Develop an implementation plan.
- Rollout the implementation.
- Evaluate how well the solution worked.
- Develop additional solutions or modify the original solution.
- Implement the modifications.
- Evaluate how well the modifications worked.
- Determine if additional improvements are needed.

CRITERIA FOR A GOOD PROBLEM STATEMENT

You have to start with a good clear description of the problem that you want to resolve.

- It states the effect (it states what is wrong, not why it is wrong, avoid "lack of" statements, avoid solutions).
- It focuses on the gap between what is and what should be.
- It is measurable.
- It is specific (avoid broad ambiguous categories like morale, productivity, communication, etc.)
- It is stated in a positive manner (not as a question)
- It focuses on the pain (highlight how people are affected, the hurt or annoyance)

Problem statements should represent the effect of some problem, without implied solutions. They should be measurable.

Examples of who what, when, and where statements:

- My car won't start.
- My program won't run.
- This customer has been billed wrong for the past four months.
- Our department is 20% over budget.

When people are trying to identify the root problem keep asking the question "why". You want to make sure that you are addressing the root problem and not a symptom of the problem. To illustrate this point I like to use the story about a fictitious town called Happy Ville. In Happy Ville there was a lovely cliff just outside of town. It was known for its beautiful views. People would go there and enjoy lovely sunrises and sunsets. Unfortunately some people also went there and out of depression or some unbearable life circumstance would throw themselves off the cliff and most often die from the fall. This was very disturbing to the town fathers of Happy Ville and so they decided in their great wisdom to station an ambulance at the foot of the cliff. That way if someone threw themselves off the cliff and survived, the ambulance could rush them to the hospital. This worked pretty well, now some of the people who jumped off the cliff survived the fall and were rushed to the hospital and some lived. After a while the town fathers still felt remorse about all those who died from jumping off the cliff so they decided to try to improve the situation. They found that occasionally two people would throw themselves over the cliff together. Or one person would jump, and while the ambulance was taking them to the hospital, another person would jump. The first might survive but the second would die because there was no ambulance to take them to the hospital. So the city fathers decided to add a second ambulance to sit at the foot of the cliff so there would always be one there when needed. After a while the town fathers felt remorse about all those who still died from jumping off the cliff so they decided to try to improve the situation. They decided that more people could be saved if they did not have the long ride in the ambulance to the hospital across town, so they decided to build a brand new hospital at the base of the cliff. Their thinking was that when someone jumped off the cliff they could be taken right in the hospital doors and treated immediately.

Is this an example of treating the symptoms of the problem and not the root cause? Is this at all familiar to some of the problem solving sessions we have been involved with in the past? Hopefully this illustrates the need for identifying the root cause of the problems.

In summary, this is the process for developing and implementing solutions to your problem:

- Clearly define the problem.
- Gather information about the problem.
- Clearly identify the root cause of the problem.
- Develop possible solutions.
- Develop an implementation plan.
- Rollout the implementation.
- Evaluate how well the solution worked.
- Develop additional solutions or modify the original solution.
- Implement the modifications.
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- Determine if additional improvements are needed.

In TQM parlance this is called the PLAN, DO, CHECK, ACT process. Plan what you want to do. Do it. Afterward go back and see how well the solution is working. Act on the information you get when you go back to check on your solution.

Summary

This has been a fast view of the Lessons Learned process. In just a half hour we have:
Described the process.
Talked about its benefits.
Given you some tips on how to get ready for the session.
Looked at a meeting agenda.
Talked about Ground Rules.
Talked about conducting a Lessons Learned Session.
Discussed the facilitators role.
Discussed “What Worked Well” brainstorming.
Discussed “What Did Not Work Well” brainstorming.
Covered Multi-voting.
Talked about developing “Next Steps”.
Evaluated the meeting for continual improvement.
Discussed “Developing Action Plans to Make Improvements”.
What make a Good Problem Statement.
Discussed the importance of identifying the root cause of the problem and not focusing on the symptoms.

I hope this overview has convinced you of the importance of learning from your experiences and demonstrates how the Lessons Learned Process can be an effective tool that you can take home and implement at your work place.

Bibliography

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HANDOUTS
For

How To Break Out Of The Same Old Routine Of Bad Quality

By Randy Slade

Lessons Learned Agenda

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+ and - on this meeting	All	12:55 to 1:00

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4. Identify highest priority items that did not work well using the multi-vote process.
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Randy Slade

Randy has been working on software development projects for the past 30 years. He has worked for telecommunications companies, public utilities, insurance, banking, and a medical corporation as a full time employee and as a consultant. He has worked in all phases of the software development lifecycle including: Requirements, Design, Programming, Testing, Implementation, Hot Line Support, Maintenance, and Data Center Operations. Having worked in all phases of the software development life cycle, he discovered that Quality Assurance and Testing are his passion. He is currently a Quality Assurance Testing Lead at Kaiser Permanente Information Technology in Oakland, California. He is a graduate of California State University at Chico and is a past member of the Data Processing Managers Association, Association for Computer Operations Managers, and the Bay Area Quality Assurance Association.