JOYFUL RESEARCH

It would be helpful if you have read the twin main articles before reading this one. Adopt the Joyfulness Practice to your research needs. There is some repetition of concepts for better clarity.

This article first discusses the attitude aspects, then the detailed process of doing research, and finally the art of idea generation and management.

Gearing For Joyful Research:

All of us are creative. We may not realize that. All prior negative conditioning and the stress has almost closed our minds. When we have fear, tension, stress, how can good, creative ideas arise? Unlike any other job, creativity requires mind to be peaceful and happy. Bravery and courage are very important in research.

You can train yourself to be "creative", just like you can train yourself to focus, or train yourself to make better decisions.

We must be grateful for the opportunity to do creative work. Success or failure are not true measures of your worth, it is your dedication to the work. You must love doing research. Even if you don't have this love right now, you can develop that with practice.

Affirm aloud about your creative intention. Continue this dialogue throughout-every day, every hour irrespective of the outcome. Your soul and universe mobilize resources to help you. Tone must be calm and firm. Don't allow any room for self doubt.

Stop complaining and whining. These create a barrier between you and creativity. With continued negativity, the distance keeps growing. Proclaim that you enjoy creative work in all phases good or bad. Say "I enjoy creativity" and mean it. It draws inspiration near. It likes appreciation.

In research it has been seen that very intelligent people did not do any good work, while ordinary looking persons created brilliant work.

A man who seems not ready for the task, not good enough for the task, somehow grows immediately into his potential through the wild leap of faith itself.

Remember that there is never a guarantee of success irrespective of talent, desire/dream and hard work. Also, even if you are good, you may not succeed or have brief spells of success.

Change definition of success. Devotion is a measure of success. That is all under your control.

Do you believe creativity/inspiration loves you back as much as you do? Trust and love creativity.

Choose stubborn gladness irrespective of how the work is going.

You need to use all the techniques discussed in the main articles to remain in a calm state most of the time. Affirmations about your creativity capability, prayers for good research of fellow researchers, prayers for the reviewers and editors for a constructive review, help. Moreover, gratitude towards Supervisor, Institute, facilities, fellow researchers, technicians, all those help in your work in some way, small or big is also important. Do not compare and compete with others. Envying other's supervisor, productive problem, publications etc. adversely affects your research. Appreciate good research by others in the world as well as those whom you know in this Institute.

Meditation on the lines suggested in other articles, and the above measures make you feel calm. Before any idea generating session, you must meditate first, and then pray to God for research ideas. Do not

insist on specifics such as time frame for the ideas. Let it come whenever God things it fit. Whenever you write down ideas after a session, first, write down all of them on paper/computer. Don't reject any one just because it looks silly at that moment. Afterwards, review each one carefully, and shorten the list based on feasibility and importance. Don't worry about your ideas changing after a while. This is due to continuous evolution. Accept that as normal. Do not wait for big ideas to start your work. Begin with whatever best you have at the moment. If there is nothing, at least implement something which others have done and you like, and feel that it will be a good experience. This gives you a feeling of doing something constructive.

We must have a group of happy, friends who help each other. Take interest in other's work. Listening to other's experiences could be very useful.

Following prayers and affirmations will help you in the process of joyful research.

Prayers:

1. God, please give me strength and wisdom to do joyful research.
2. God, please give me strength and wisdom to joyfully tide over difficult times.
3. You may provide solution, ask me to put it on hold, or drop it altogether. You alone know what is best for me.
4. When God closes some doors, he opens new doors for me. He knows the reason for both.
5. God, give me a capacity to lovingly do my best in every stage of research from idea generation to paper submission.
6. Thank you, God, for my joyful research.
7. May God bless the Journal editors and reviewers with love, harmony and happiness.
8. May God bless my supervisor, other teachers, technicians and all the colleagues, with love, harmony and happiness.

Affirmations:

1. I love to see everyone doing quality research.
2. I love creativity.
3. I love doing my best everywhere.
4. I love being peaceful and joyful.
5. I love myself with my strengths and limitations.
6. I admire the contributions of the author in this paper (be specific).
7. I love getting research ideas from God who also provides me with detailed solution strategies.
8. I am happy, and contented with whatever God gives me.

To counteract the fear, repeat to yourself, "I am joyful in research. I am poised, serene, confident and calm." At each sitting repeated this statement slowly, quietly, and with feeling 5-10 times. Have 3 sittings every day, and one immediately before going to sleep.

From today onward, my research is improving in every way. I always get guidance about whatever I need to do at every moment of time and point of space. The impressions I receive are clear and definite.

Never say "I can't." Instead, say "I can do all things through the power of my own subconscious mind."

I rejoice in that man's success in research. I wish him greater and greater success in research."

When you have to make a difficult decision, or when you fail to see solution to your problem, begin at once to think constructively about it. If you are fearful and worried, you are not really thinking. True thinking is free from fear.

You have freedom to choose happiness. The great things in life are simple, dynamic and creative. They produce well-being and happiness.

Check Motivation and Goals Every Day: Every day have a dialogue with yourself before sleeping and check whether you are on track regarding the following. If not, immediately take corrective measures.

Life Goal: To improve my capability to be always joyful

Academic Goal: To enjoy every moment of doing research, and to continuously improve all round research skills, broad knowledge base, and develop a confident personality.

Let us now understand the process of doing research.

Selecting a Research Topic:

If a supervisor does not directly give you your research topic, or give help in finding one, this could be one of the most daunting tasks. There are so many areas, and there is such an enormous literature, that one feels completely overwhelmed if you don't do it in a scientific and enjoyable fashion. One flipside of the supervisor not helping is the great advantage of being given freedom to choose what you like best and also what you are good at. So it should be taken as a boon. Some supervisors do it deliberately with this objective in mind. Following are the steps regarding this.

1. Pray for God helping you to do this in a joyful manner.
2. Affirm that you love and look forward to this exciting process.
3. Discuss with the supervisor, and seniors over a week or two about the possible research topics. You may also just scan the best one or two journals for titles of papers to know the activity in the area (No paper reading, not even abstracts). Then select about 4 topics for further exploration.
4. Select one topic at a time, and just make a list of about 20 papers and just read the abstracts and make notes about important points in each paper like the problem tackled, major contribution, and how it has been achieved. Depending on the area, also note down the technique, tools, mathematical models, processing etc. (whichever is relevant). After the process is over, write your remarks about how you like it, how confident you are about the background skills etc. Then repeat the same exercise for the other areas. The process can take up to two weeks. Finally, take some time (about a week) to make up your mind about the final topic to work on. Always keep the supervisor in the loop as far as possible. Now a days, supervisors are extremely busy, so don't always wait for a personal meeting. Send your work through email. It is very important to remember that there is no perfect answer for best topic selection, and it doesn't matter also. The process like life is fuzzy, and we should just be happy with what appeals to the conscience at that moment. Surrender this decision to the God and move ahead.
5. After selecting a topic, the real, rigorous literature review begins. However, this also must be done in systematic steps to prevent information overload. Start with the list of papers identified in step 4. Now, read each paper in some more details, but not for complete understanding, just awareness. Prepare just a maximum one page note(word file) regarding the problem tackled, major contribution, key new concepts through which it is achieved, and other important details relevant to the area as mentioned earlier. Repeat this exercise for each paper listed.
6. After the exercise, read all these one page reviews again, and with the help of the supervisor, shortlist about 8 papers to explore further depending on the suitability for your work.
7. For each paper shortlisted in step 6, read in some more details to understand the way contributions have been achieved. Even at this stage, the attempt is not to understand complete details. You can now make a 2-3 page abstract. Include details of the techniques, tools, processes, mathematical model, complexity etc. depending on the relevance to an area. Share

with supervisor this review, and shortlist 3-4 papers for a final thorough review. This process can take 10-15 days.

8. Take each paper listed in step 7 and read each of these papers as if you were going to implement the same yourself. Take your time in understanding all complexities. Read some more background material if required for the same. You should finish this exercise in 10-15 days.

Second Stage: Develop strong background for the problem selected. Now that you know what is involved in doing this kind of work. With the help of the supervisor and seniors, develop a detailed plan of building up expertise for the work. Depending on your area, this may involve learning instrument use, lab processes-reactions etc., programming, math models, analytical tools. If possible, try to replicate what other researchers did, or what your group seniors did, to gain confidence and in depth understanding of the research topic.

Third Stage: This is the productive phase. The detailed process about this is given later. However, at any given time you must have a mature, well developed idea on which you are putting maximum effort and expect promising results. Simultaneously, you must also have a back-up problem on which you have done considerable thinking, but it maya bit more work before actual implementation. Moreover, you must also have a third level of promising problem which needs much more thinking. Whenever you face serious bottlenecks in the front line problem, if it is a short term snag, you can re-plan your activities to utilize free time for activities to which you could not devote time due to work pressure. This may include pending paper writing, latest literature review, or learning anything which will be very useful for your work. If the difficulties are long term, you may switch over to the next promising problem. In short, your To-Do list must be so long that you are never short of good work.

Tips About Paper Writing:

This is an art which you must start learning while doing initial literature survey itself. Keep a Diary and keep notes of how well known researchers write their papers. You must also see the writing style of good seniors in the group. Note how each section is written, right from Abstract to Conclusion. Some Editors and Reviewers like some distinctive style. You learn that through experience.

Every paper has the following minimum sections. Abstract, Introduction, Main Contribution Section with an appropriate title, Results and Discussion, Conclusion. As per specific requirements, on may add sections and have sub-sections. Each journal has its own specific format requirements including page limits, Abstract word limits, figure and table guidelines etc.

The Abstract begins with the problem you are discussing, it's importance/significance. Then introduce what novelty you bring in and its significance. The concept on which it is based. Then discuss what kind of results have been obtained and what do they prove (validation etc.). All must be very brief, each one in a sentence or two.

The Introduction section begins with description of the research problem, and its significance. Then provide the relevant, critical literature review and bring out deficiencies in them. Avoid using harsh words about previous work. Clearly state the motivation of the paper bringing out very briefly how the paper improves upon earlier works. It ends with the outline of the paper.

The Main Section introduces the problem, and details the methodology of the contribution. This section should ideally be the longest section in the paper. Focus her should be on your own contribution, and supporting material from other papers, even if essential for understanding, should be very brief, otherwise, put in Appendix.

The Results Section details what has been studied and how each part of the study aims at proving the claimed contribution. As far as possible provide sufficient validation of the results. This is a very

important section, it should be quite detailed. Each and every graph and table must be commented upon to show what significant aspect it brings out.

The Conclusion Section begins with the problem studied and its importance. The important elements of the new contribution and their significance. Then explain what studies have been done, and bring out the salient aspects of the results which support the claim of the contribution.

It is important to note that the introduction section should not be too long. Maximum space must be taken by the Main and Results sections. Conclusion should also not be very big.

Please avoid making over the top claims about your work. Be modest while still bringing out the strength of your work on a factual basis.

Selecting the Journal for Submission: While doing literature survey, you get clues about the kind of work required for a particular journal. Through discussions with the supervisor, prepare a ranking of journals in your area. You must rate your work along with the supervisor to know the most appropriate journal for submission. If you feel the work is really very good, you must try for good journals, particularly in the initial phases of your work. Even if the paper is rejected, the feedback could be very useful for better quality research. As far as possible select a journal based on its ranking along with your work rating. This avoids painful, cascading time delay due to multiple journal reviews before rejection. However, the final decision about how much risk to take is entirely up to you.

Reviewers and Editors are doing an enormous service to us without any monetary compensation. They also have huge work load. Hence, it is important to express gratitude for them and pray for their welfare to create a harmonious relationship instead of an adversary kind of feeling. This should be in your daily schedule, particularly during paper review phase. Any negativity towards them enhances chances of paper rejection.

Understanding Review Process: It is important to understand that review process is far from perfect, and you may not always get justice. Some reviewers may also give idiotic reviews. Some others could also be unduly harsh about the work. There are quite a few very knowledgeable reviews as well. Overall, you get a very good feedback to improve upon. In any case do not attach emotions to your work.

Most of the journals require your work to go through more than one review to get it accepted. So, have patience. Different journals also have widely varying levels of review time cycles. You can get feedback from your group regarding this. Take this thing into account while selecting a journal for submission.

Responding to the Reviewer's Comments: The 1st time you read the comments, because of emotional involvement, you feel them to be biased and wrong. Take a second look at it after a day or two when you are reasonably calmer. Write down points one by one, and giving the benefit of doubt, try to understand the point he is making. If you think deeply, you will see most of the times that the reviewer has a genuine concern. Do not be in a too much hurry to resubmit the paper. Look at your response multiple times, and see whether it can be improved any further. Best strategy is always to do as much as possible what they have asked, rather than aggressively justifying what you have done, unless you have solid, logical justification.

Facing Paper Rejection: Your paper can get rejected in the first review itself, or after 2nd or 3rd review. Your job is to always keep doing joyful research, and sending out for evaluation and subsequent learning. That itself is your reward, not acceptance or rejection.

Process of Problem Selection:

Notice and Solve Problems: There are problems everywhere, if you pay attention to them. True breakthroughs happen when you notice problems and create solutions. Problems stimulate you to really think about what can be improved. Observing problems is a good start. Stop Thinking New Ideas, Find

Problems. Don't look for a great idea. Look for a good problem. Observe the troubles that you come across in your everyday work.

Start with a problem within your reach. Look for one where you can excel by using your knowledge and skills.

Incubating New Ideas and Their Management For Identified Problems:

There is no logical method of having new ideas or a logical reconstruction of this process. Advice is only to stimulate thinking in a tangential way.

Where do great ideas come from? The clichéd view is that they come fully formed in a flash of inspiration. The truly great ideas, are the product of processes. They are the product of what a person sees and gets in touch with every day that combine to influence a thought. A random thought turns into an idea, then the idea is worked on.

The best ideas come to you when you start from a blank slate and assume that you know nothing. Innovation comes from breaking boundaries, not being limited by what you already know.

Usually when we hear about these ideas, it is when they are at their most successful. We don't see the weeks, months, and years where the initial idea was developed, or the successes and early failures of the research. The human brain favours any action or option which uses the least amount of energy. So where it might be more useful to come up with ten different ideas for us to work on, we struggle to come up with one to save up energy. So we try very hard to come up with a fantastic idea. But even if we do come up with an idea, we have no idea whether it is good or not because it doesn't have concrete details on how it's going to work. Without the details and a plan to take action on the idea, we judge its failure early before it can incubate into something great. Unless an idea is executed, our brains are unable to determine whether an idea is going to be great or not.

But if we think we will come up with the next big idea without placing ourselves in the right context, and don't allow for ideas to come to us naturally, then it is guaranteed that they won't come to us at all. Instead we get stuck.

The Truth is Good Ideas are Random. One day you might come up with ten ideas, of those ten, one might be an okay idea. We might often instinctively reject an idea that we judge to merely be "okay". However, an okay idea can become a fantastic idea with work, and ideas that are truly great from the start are so rare that they might as well not exist. It's like with novel writing. A truly brilliant book tends to be the product of months if not years of hard work, of endless re-writes.

All That is Needed is the Right Kind of Stimulation. Great ideas then come from what we see, what we hear, the people we speak to, and most importantly, a great idea can come as the solution to a problem. This can be tricky, it can often be easy to be disheartened when faced with a problem. But that's what innovation is, true innovation comes from either resolving a problem or finding a gap in which can be filled by a great idea. So next time you are faced with a problem, see this as an opportunity. Even if a solution exists, you might be able to think of a better one.

Take the risk of trying to think innovatively. When a venture sounds risky, we habitually take a safe route. In academics, it is over extending literature survey. New connections are not there in literature. However, systematic review is very useful. But no endless search. Arthur Shopenhaur says:" Don't read, think!"

Effort to reconstruct, redirect attention, vary assumption- is a must. Linus Pauling: The best way to get a good idea is to get lot of ideas. We tend to have fear/aversion of writing down 10 poor, half-baked ideas-and miss out a great idea.

You can write ideas with remarks like (i) Possibly correct-find out (ii) Might be wrong-worth keeping (iii) Likely wrong, but interesting

An adult has an average of 50,000 thoughts every day. It's normal to forget most of them as our brains have to filter out unnecessary information so that we don't go insane. The problem is that we forget a lot of great ideas along the way**.**

In today's race against time, we just can't spare an extra moment to jot down the ideas that constantly pass through our heads. Some people may think that it's even a waste of time. We think that if the thought is that important, we will remember it later and put it into action. But we don't.

Great Ideas Often Come When We are Least Prepared : Most of the time great ideas come when your brain is in "diffused mode": Thoughts come to you in this state when you're not intently focused, like when you're daydreaming or zoning out in the shower. Creative ideas come to us during this state of mind because this is when our minds are the most relaxed. This is when our brains connect different neural pathways to come up with brand new ideas (the same as how creativity allows us to connect the dots, our brains do this naturally in this state). The problem is that because our brains are so relaxed, there's no intention to mark down ideas that come along.

Don't Be Lazy, Jot Down the Great Idea No Matter How Confident You Are That You Will Remember It. Keep recording tools within reach, but not directly in sight. If you set out a notebook and pen directly in front of you, you are no longer in diffuse mode and thoughts are not free flowing. But you want the notebook to be close enough, so that when the thoughts do come to you, it takes very little mental and physical effort to quickly jot them down.

Very often the ideas that come to us during diffuse mode can be a bit abstract. This is your best content.

Your next great idea might not seem great at first. It might just seem like an okay idea, a mediocre one, or even a bad one, all ideas need work. So don't judge any at first, let ideas come naturally and write them down. It doesn't matter how bad they seem, just write them down.

Don't worry about organizing them either, in fact it's good not to. You might miss a good idea while you're working on the organization. Stick to the process of free thinking and writing down ideas and leaving them alone until later. If you try to organize them as they come, you'll lose many ideas because you are too focused on a single idea. You'll also lose motivation because you're loading yourself up with work and complicating the process. Organizing at this stage will just mean that you're giving yourself an extra job to do which may slow you down or even make you lose motivation.Organizing is a separate task for later, when you switch into focus mode (the opposite of diffuse mode).

VIMP: Protect new ideas from criticism for a time. Never review viability one by one. That way, you discard too many and miss connections between them. Instead, try to surface a whole filed of ideas, and critique them only at the same time, looking at connections-"gold content."

Review Ideas From Time to Time: Now that you have the ideas written down, you need to reinforce the ideas to turn them into something bigger. You should review your ideas around 3 times a week. While reviewing you can filter out some of the less useful ideas, organize them, and start developing the potentially successful ones. Remember, most people have plenty of great ideas, just very few of them bother to jot them down. And those who do are the ones who succeed.

Be a constructive self-critic**.** Always sift and critique ideas at a separate stage-after letting them grow a bit, and after having a lot of them. Sort good/bad with a whole field in view. Target inconsistencies rigorously.

Run several ideas in competition. File for each and add stuff for a month. After that see which one is more promising. Without competition, you hold on to unpromising ones. Now you can make better choices. While explaining, make a good presentation.

Look harder. Be alert for anomalies and paradoxes in research. Don't accept them. Look for unstated premises, contestable assumptions. Keep on looking for novel ideas others have used successfully elsewhere. Edison: Your idea has to be original only in its adaptation to the problem you are working on.

Look beyond your discipline-Cross pollinate-Take good ideas.

People are creative when not too worried. Condition for creativity: to be puzzled, to concentrate, to accept conflict and tension. Creation of new not by intellect but by instinct and inner necessity. You must be psychologically secure to innovate. Keep risk exposure comfortable for you. Be over optimistic, over ambitious, but keep good insurance against failures. Try to identify and build "solid work fall back options, exit ramps and second best outcomes. Do not let your Ph.D. or Post Doc depend on one idea.

The foundation of being a creative person is having faith and belief in being creative, and the ability to improve the same. This is not a onetime effort. One needs to continuously keep on working at it. This is because creativity by its very nature is not very consistent in terms of output. Hence, if we don't understand and accept the nature of work, we could feel depressed when the efforts for prolonged periods can appear to be completely fruitless.

Believe in the universal abundance. There are abundant no. of problems to solve and abundant no. of ideas to solve them. The key is to know how to connect with the source of abundance within each one of us. Hence, there is no need for competition or comparison. However, it is important to know that every human being has strengths and weaknesses. Hence, everything remaining same, our outputs are bound to be different. We must accept this fact with love and serenity. We can only do our best in a given situation, and that itself is success and happiness, and not the end result. The former is in our control and the latter depends on multiple complex factors.

Goal Setting and Time management: Please read articles regarding these for the following.

In consultation with the supervisor, prepare an annual, semester, monthly, weekly and daily plans. The plans cover not just research but all areas. It is also very important to keep checking daily, weekly and monthly, how you are performing in reaching your goals.