

	Statement or explanation	Category or subcategory
1.	<i>A benefit (good thing) of Chemistry practicals is to develop skills.</i>	<i>skills</i>
	Yes, so we know how to survive.	life skills
	Yes, if you want to become a scientist or something closely related.	science career skills
	Yes, a practical opens your mind to a clear picture of what is happening.	visualization skills
	Yes, because it's much easier to remember an experiment you actually did.	memorizing skills
2.	<i>A benefit (good thing) of Chemistry practicals is to be able to gain more knowledge.</i>	<i>Knowledge</i>
	No, I don't think chemistry practicals help us to gain more knowledge.	Disagree
	Yes, and we could use this knowledge in many different ways in the future.	gain useful knowledge
	Yes, we gain (specific) knowledge when we do these chemistry practicals e.g. we learn about how the different elements react in different substances.	gain specific knowledge
	Yes, because in everyday life you will start to notice things similar to the practicals.	gain transferable knowledge
	Yes, but it only helps if you research for it.	gain knowledge with effort
	Yes, because you can learn from other people in your group.	gain knowledge co-operatively
	Yes. If you get notes you just have to believe it, but when you get a practical you can see it for yourself.	gain knowledge based on evidence not faith
	This is true. When I do practicals, I remember the concept for much longer and therefore it helps me when researching.	gain memorable knowledge
3.	<i>A benefit (good thing) of Chemistry practicals is to Prove a Theory.</i>	<i>evidence</i>
	Yes, but most of the time the experiments don't work.	disagree in practice
	Yes, because it makes theories easier to believe.	Evidence
	No, most theories have already been proved by qualified scientists over and over again. It is not necessary to prove them once again.	Unnecessary
	This is true. By actually doing it you understand the theory.	Understandability
4.	<i>A benefit (good thing) of Chemistry practicals is to learn to handle apparatus.</i>	<i>apparatus</i>
	No, because I don't see the point in learning how to use some of the apparatus because we might never use the apparatus again in our lives.	Unnecessary
	No, I don't think chemistry practicals help you to handle the apparatus.	Disagree
	Yes, because it will help us prepare for the world.	general experience
	Yes. If you never get to handle the apparatus, you are always nervous when using the apparatus by yourself.	Confidence

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	Yes, because of unknown dangers chemistry experiments could bring.	safety/ carefulness
	Yes, this is very important as all apparatus is important and should be handled with care.	care of apparatus
	Yes, because practice makes perfect.	Competence
5.	<i>A benefit (good thing) of Chemistry practicals is to know how chemicals react.</i>	<i>chemicals</i>
	Yes, as long as the practicals don't involve experiments using dangerous chemicals, or pupils being unsupervised and out of control.	safety proviso
	No, because knowing how chemicals react will never affect me in my real life.	Useless
	Yes, because it brings a bit more excitement for teachers and pupils.	Excitement
	Yes, practicals help you understand that specific reaction.	Understand
	Yes, because different things can be proved and discovered.	Evidence
	Yes, so when we are older we will know the basic reactions and we will know what to do.	useful knowledge
6.	<i>Chemistry practicals are a benefit to someone wanting a good success in Life.</i>	<i>future</i>
	Yes, because by doing practicals we can develop our skills.	develop skills
	Yes, because by doing practicals we can familiarize ourselves with the work and elements.	familiarity with the subject
	No, because not all fields of work use chemistry.	irrelevant for non-specialists
	Yes, because chemistry practicals teach you discipline and make you have an inquisitive mind to succeed in life.	habits for success
	Yes, because having chemistry practicals will help you survive, e.g. knowing which gases are noxious and which won't kill you.	Survival
7.	<i>A benefit (good thing) of Chemistry practicals is to investigate.</i>	<i>curiosity</i>
	Yes, because this way we learn more about chemistry.	learn about chemistry
	Yes, because you could find extra information that interests you.	Interest
	Yes, because investigating is the most fun part of science.	Enjoyment
	Yes, because you should always be asking yourself "why".	Curiosity
	Yes, because sometimes first hand experience is the only way that one can truly understand certain situations.	Experience
	Yes, because it also allows you to visualize the situations when it comes to exams.	Visualize
	Yes, because teaches you <u>how to</u> investigate.	learn to investigate

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	We would like to find out things for ourselves, but we are not given “room” for investigation.	constrained in practice
8.	<i>Chemistry practicals help me to know what is meant by Chemistry</i> ...	<i>Nature of Chemistry</i>
	... for example knowing chemicals and how they work.	chemistry as chemicals
	... and if I know what is meant by Chemistry I will enjoy the subject and the experiments we do.	leading to enjoyment
	... but I need theory first to know what I’m doing.	practicals are secondary in getting to know what is meant by chemistry
	... because I can physically see and experience the reactions of substances.	chemistry as reactions
	... through observation of the particular substance in comparison to another substance.	chemistry as substances
	... because practicals help me understand what the teacher is trying to tell us.	leading to understanding chemistry
9.	<i>It is easy to learn with Chemistry practical work.</i>	<i>opportunity</i>
	No, because practicals do not help me understand the chemistry or the content we do in school.	Understand, no
	No, because I find Chemistry practical difficult and hard to understand.	practical difficulty
	Yes, because practicals make chemistry seem fun.	enjoyment
	Yes, practicals make it easy to remember because I have a mental picture of the experiment.	Visualize
	Yes, because it is easier to remember what happened in the experiment if you see it happening than if it is explained to you in your book and by your teacher.	memorable
	Yes, because it is easier to learn when you are physically doing it rather than just learning on paper.	Activity
	Yes, because it helps students develop an interest in what they are working on.	Interest
	Yes, I understand more clearly if I learn about the Chemistry and then do a practical.	understand Yes, if
But if the Chemistry itself is difficult, then the practical is often not very beneficial.	sometimes not	
10.	<i>Chemistry practicals benefit me (are good for me) when I follow the instructions.</i>	<i>required</i>
	Yes, but only if it goes well.	Chance
	Yes, because then I get better marks.	Marks
	Yes, because you actually learn something if you follow instructions.	Learn
	Yes, because then everyone has a really good time.	enjoyment
	No, because they limit your ability to think freely.	limit thinking

	Statement or explanation	Category or subcategory
	Yes, because instructions are there for you to get a result correctly if you follow them correctly.	success as planned
	Yes, it is better for understanding the practical.	understand
	Yes, because I will not hurt myself if I do follow instructions.	Safety
	Yes, because practice makes perfect.	success through practice cumulative benefit
11.	<i>Chemistry practicals help you understand Chemistry.</i>	<i>understand</i>
	No, you do not need to understand chemistry but you need to be able to do enough examples and work out of different research guides.	not necessary
	Yes: It is often difficult for pupils to visualize and understand the work with notes, but practicals show us the work hands-on.	Active
	Yes, because practicals show us the work in a fun atmosphere.	Enjoy
	Yes, because you see the experiment being done rather than being read to you or if you read what happens.	see, not read
	Yes, because I actually work with the materials.	experience
	Yes, but only if you understand the main concepts of what you are doing.	understand before doing practical
12.	<i>A benefit (good thing) of Chemistry practicals is to work as a group.</i>	<i>social</i>
	No, because some people don't do work. They tell one person in the group to do all the work. They get the same marks but don't do any work.	inequality within group
	Yes, because working in groups at school helps you to know how to get along with other people.	group work skills
	Yes, because it also allows me to learn something I don't know from another group member.	learn from peer
	Yes, because it is an opportunity for the learners who know more to help the learners who know less.	peer help
	No, because the clever learners then take over and the others don't reach their full potential.	inequality within group
	Yes, because working together is fun!	enjoyment
	Yes, because we can do experiments better, especially those that need more than one person.	improved performance
	Yes, because group work enables us to share our knowledge.	Share
13.	<i>Chemistry practicals benefit me (are good for me) when I have to think e.g. for Interpretation of results.</i>	<i>reasoning</i>
	Yes, because when I think about it, I will write it down therefore making it easier for me.	think to use later
	Yes, and it will benefit you even more in years to come.	think to record
	Yes, because it helps you to better your knowledge.	thinking improves knowledge

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	Yes, because I can actually see it with my own eyes and compare my notes with the experiments, and see how they differ.	thinking as verification
	Yes, because they teach me to think in different ways that will help me throughout life.	practicals promote thinking
	Yes, because it makes you find out a lot of things for yourself.	think to find out
	Yes, because it makes you understand the experiment better.	thinking leads to understanding
	Yes, because it helps me in identifying characteristics and properties of certain elements.	think to identify properties
	Yes, because thinking makes me interested.	thinking causes interest
14.	<i>Chemistry practicals are good when I can apply Chemistry to things I know. For example cold drink, saving the environment, unleaded chemicals, Chemistry in the kitchen, clean water, etc.</i>	<i>apply chemistry</i>
	Yes, because it can be a good survival tactic.	Survival
	Yes, because a practical which you can do in your everyday life is even more enjoyable.	enjoyable
	Yes. By using things that people see everyday, experimenting has no limits and you can go home and show others.	accessible to all
	Yes, but it depends on each persons individual interests.	individual interest
	Yes, because chemistry is easier to understand when you know how and why and where certain chemicals are used in everyday life.	easier to learn
	Yes, because that is a lot more useful than if you were to learn about useless information.	Useful
	Yes, because it does help to do experiments with things that you are familiar with.	Familiarity
15.	<i>A benefit (good thing) of Chemistry practicals is to learn to avoid accidents.</i>	<i>safety</i>
	Yes, because you can actually learn how to handle different dangerous substances.	learn to work in a dangerous situation
	Yes, but we should not be allowed to do these dangerous experiments ourselves.	risk not worth it
	This is wise because some of these chemicals can cause serious injury or even death.	necessary
	Small accidents help you remember how it should be done.	accidents teach
	In our everyday life we can avoid serious injuries or death by just having a little knowledge of dangerous reactions.	Informed decisions in daily life
	Yes, because we are made aware of how dangerous some reactions can be.	learn about dangerous situations
	We can use this skill (avoiding accidents) later in life.	skill for future
	It does teach you to be more careful about what you are doing and to think before you act.	learn to work carefully
16.	<i>A benefit (good thing) of Chemistry practicals is to experiment.</i>	<i>experiment</i>

	Statement or explanation	Category or subcategory
	Yes, because you can achieve the concepts of chemistry better.	experiments teach concepts
	Yes, because you will expand your knowledge and learn things that you never knew.	experiments help learning (unknown)
	Yes, because we remember much more.	experiments help learning (remember)
	Yes, if you do it by yourself you will understand the principles of Chemistry better.	individual experimentation necessary
	In practice, groups make it difficult for individuals to benefit from the experimental idea.	Group
	No, because learners do not have the knowledge to experiment.	Informed experimentation
	Yes, because it allows the learner to get the feeling of working "chemistry".	experience of phenomena
	Yes, because experimenting is fun.	Enjoyment
17.	<i>A benefit (good thing) of Chemistry practicals is to record.</i>	<i>record</i>
	It is a good thing because we can record our results and then use them in other things e.g. compare with peers or refer to the textbook if needed, and then make a reasonable conclusion.	record to develop the information further
	It benefits you but makes the practical boring.	Chore
	It is good to record so that you can remember what worked and what did not work and also to learn from your mistakes.	record to learn
	Yes. You are recording it for future reference: when you want to remember something, you check your record, e.g. when having a discussion, doing class work, and learning for test or examinations	record for future reference
	Yes, but some practicals are just to see (not to record).	not all practicals need to be recorded
18.	<i>A benefit (good thing) of Chemistry practicals is to give me ideas in Chemistry.</i>	<i>creative</i>
	Yes, because it helps to broaden one's thought pattern.	Broaden thinking
	Yes, because it can give ideas for future work.	ideas for follow up
	It helps when I need to figure something out, because I will think logically about what would happen.	thought experiments
	Being taught is more effective. Practical's are a waste of one's time.	unnecessary
	Yes, because it makes me think of other experiments.	relate to other work
	Yes, because I can learn about new apparatus, formulas, chemicals and how to work properly in a Laboratory.	new work = new ideas
19.	<i>Chemistry practicals make the subject more interesting.</i>	<i>motivational</i>
	Because I learn with visual stimulation to gain a better understanding of the subject.	visualization
	Yes, because you are actually "experimenting" and not sitting behind a desk listening to the teacher talking.	Activity

	Statement or explanation	Category or subcategory
	Yes, because without practicals, Chemistry would be boring.	enjoyment
	Yes, because you get to understand the things better. Practical make more sense of Chemistry.	understanding/ sense making
	More chemistry practicals make Chemistry more enjoyable so we want to learn and we get better marks.	impact on marks
	Yes, because we learn things we would not learn if we were just doing theory.	help learning
	Yes, especially because later in life you may not have the chance.	Opportunity
20.	<i>A problem of Chemistry practicals is we do not have much time to do practical work.</i>	<i>Lacking time</i>
	No, we do a lot of Chemistry practicals.	Disagree, proportion
	No, we have more than enough time to get through all of our practical work.	Disagree, time/prac
	Yes, by the time we get all the equipment ready, the period is already half over.	% of practical time spent on the practical
	Yes, because experiments don't always work so it may need to be done over again.	contingency time
	Yes: If we did less Chemistry classwork, we could spend more time on Chemistry practicals.	proportion of practical time in curriculum
	Yes: For an average student it takes longer to complete a practical than for a student with more science ability.	individual speeds
	Yes: Many of the practicals do take a lot of time and we might not have enough time to do one experiment in one science lesson.	time available per practical
	Lack of time leads to you rushing through the experiment, and not doing it correctly nor understanding it.	Negative impact
21.	<i>A problem of Chemistry practicals is we don't have enough equipment and chemicals for all the experiments that we need to do.</i>	<i>Lacking equipment and chemicals</i>
	It is expensive but worth it to buy these chemicals and equipment.	Cost
	Yes: sometimes we can only use a little bit of the chemicals.	sparing use of chemicals
	We have all the equipment we need.	sufficient equipment
	Sometimes some chemicals are not available and we cannot be shown certain reactions.	variety of chemicals
	We must have enough equipment and chemicals otherwise doing practicals is pointless because you cannot complete the practicals successfully.	necessary
	Rather it would be more beneficial if the teachers were to solve this problem creatively and use what they have.	use what have
	We need to find out which are important experiments and get the right equipment for them.	Prioritize purchases
22.	<i>A problem of Chemistry practicals is sometime the experiments do not go well, or as planned.</i>	<i>Practical not working</i>
	Yes, but it is still fun and exciting.	enjoyment

	Statement or explanation	Category or subcategory
	If I do the experiments properly, they will usually go according to plan.	onus on learner
	It depends on the resources of the laboratory.	resources
	If it does not go well you try again and learn what went wrong the first time.	opportunity
	This kind of practical should be done by a teacher and learners should do easier practicals that can always have perfect results or predicted results.	onus on teacher
	When the experiment does not work we are disappointed and do not want to continue.	demotivation
23.	<i>A problem with Chemistry practicals is the lack of main content.</i>	<i>Practical without theoretical background</i>
	No, because the teacher gives us worksheets with the practicals.	Disagree worksheets
	I think we have enough content in the practicals.	Disagree there is content in the practicals
	Some things that we might find interesting are cut out.	agree lack interesting content
	I personally get enough information from my teacher.	Disagree get information from teacher
	No; because the basics have been learnt and on that the rest can be built.	Disagree basics learnt
	Yes: You are not always sure what is going on so you cannot sufficiently learn.	agree uncertainty decreases learning
	Yes, practicals tend to concentrate on specific content and they don't always link up with the main content.	agree not linked to main content
	Sometimes you can learn a lot but other times the practical is pointless.	amount learnt varies
	No, because we always keep to the main point.	Disagree keep to the point
	The lack of main content in instructions is problematic.	agree lack content in instructions
24.	<i>There are problems in Chemistry practicals if the learners don't know how to develop skills.</i>	<i>Practical without being able to develop the skills</i>
	Some students do badly because of self-cause.	onus on learner
	Yes, but only simple instruction is required.	easily rectified
	Yes, because you need a variety of skills e.g. the skill to observe, using pipettes, Bunsen burners, etc.	need to develop a variety of skills
	Yes, because some learners don't develop skills as fast as other learners in the class.	individual variation
	The teacher must demonstrate the practical properly for learners to understand.	onus on teacher
	Learners will develop these skills with practice.	practice suffices
25.	<i>A learner who is not co-operative is a problem in Chemistry practicals.</i>	<i>Learner behaviour</i>

	Statement or explanation	Category or subcategory
	Yes, because the learner could cause an accident.	Safety
	Yes, you can't work when someone is fooling around.	affect peers
	Yes, because the teacher usually has to stop whatever she is doing and this wastes a lot of time.	affect teacher
	The learner is going to find himself failing the practical.	consequences for learner in question
26.	<i>A problem for learners is understanding Chemistry practicals.</i>	<i>Learner limitations</i>
	If we know about the reaction, there is no need to do Chemistry practicals.	practicals not necessary
	You have to know what experiment you going to do before you do that practical.	preparation is necessary
	No, because Chemistry practicals are relatively easy to understand.	Disagree
	Yes, but the practicals do help.	agree; nevertheless some good in practicals
	No, if learners pay attention there would be no problem understanding.	onus on learner
27.	<i>A problem is doing Chemistry practicals in an environment not fit for experiments.</i>	<i>environment</i>
	Yes, because you need the right place with the right instruments.	equipment
	Yes, because it's dangerous to the learners and to the teacher.	Safety
	Teachers should decide which practicals can be done in the available room and they should make sure there is a fire extinguisher and sand to put out experiments that have gone out of control.	onus on teacher
	It is a problem that you yourself can solve, for example you can create equipment.	improvise
	Doing practicals in an unfit environment can be inaccurate or may even not work.	effect on results
28.	<i>A problem of Chemistry practicals is teachers expect learners to do things themselves while the learners don't understand.</i>	<i>teacher</i>
	If the teacher did explain and the pupil wasn't listening in the class then the pupil should suffer the consequences.	onus on learner, to listen
	It's the learner's job to solve problem by asking people or going to the library and try to understand; then ask the teacher for some help.	onus on learner, to understand
	That's why your teacher should have already explained before the practical.	onus on teacher
	Yes, but it can help the pupils with the mistakes they have made.	learn from mistakes
	I don't agree with this statement. Our Science teacher changed us to students that ask, 'Why' until we understand.	Disagree