**S1 Table. List of questions used in the study**

**Intrinsic Motivation (5 items)**

*Response options: Completely disagree, Disagree, Neither agree nor disagree, Agree, Completely Agree*

* I enjoy working with Microbiology
* Microbiology activities are fun to perform
* Microbiology is boring
* Microbiology does not hold my attention at all
* I would describe Microbiology as very interesting

**Self-efficacy (8 items)**

*Response options: Completely disagree, Disagree, Neither agree nor disagree, Agree, Completely Agree*

* I am confident and can understand the basic concepts of Microbiology
* I am confident that I understand the most complex concepts related to Microbiology
* I am confident that I can do an excellent job on the assignments and tests in the Microbiology exercises
* I expect to do well in Microbiology
* I am certain that I can master the skills being taught in Microbiology
* I believe I will receive an excellent grade in Microbiology
* I’m certain I can understand the most difficult material presented in this course
* Considering the difficulty of this course, the teacher, and my skills, I think I will do well in the class

**Knowledge of microbiology (10 items)**

*The cursive response in bold is the correct answer*

**An unspecific growth medium**

* ***Will support the growth of a wide range of microorganisms***
* Must be incubated at 37°C
* Will contain selective agents
* Will contain differential agents

**The optimal growth temperature of a microorganism**

* ***Usually reflects the physical conditions of the organism’s natural environment***
* Is the highest temperature at which a microorganism can replicate
* Is the median point between the lowest and highest temperature thresholds at which a microorganism can replicate
* Varies depending on the laboratory culture conditions that are set

**Isolated bacterial colonies**

* ***Are clonal populations that arise from a single cell***
* Are usually larger as they have more space to spread
* Are genetically diverse micro-populations that arise from a single cell
* Result from restrictive growth conditions

**Streaking agar plates to achieve isolated colonies**

* ***Requires systematic thinning of bacteria over an agar plate to the point of single cells***
* Requires the wire loop to be sterilised as part of good Health and Safety practice
* Requires the wire loop to be sterilised to pick up a single-cell inoculum
* Requires a selective and differential agar

**A differential agar**

* ***Differentiates between bacterial phenotypes whose growth it can support***
* Selects for the growth of specific microorganisms
* Differentiates between Gram +ve and Gram –ve bacteria
* Will restrict the growth of lactose fermenting bacteria

**A selective agar**

* ***Will be made from one of many agar recipes able to restrict the growth of specific*** *microorganisms*
* Will allow us to observe bacterial colonies restricted by the given growth conditions
* Often indicates the fermentation abilities of microorganisms
* Requires a pH indicator to be added to the agar growth medium

**Instruction given before the following questions were asked:**

***Read the following description of MSA before answering the questions under:*** *Mannitol Salt Agar (MSA) contains mannitol (a sugar) and a high level of salt that limits the growth of many organisms. It is a clear pink colour and contains a pH inidcator that will turn yellow when acidic.*

**In MSA, mannitol is**

* the selective agent
* ***the differential agent***
* a carbon source
* a pH buffer

**The selective constituent in MSA is**

* mannitol
* acidic pH
* ***salt***
* what allows us to differentiate between organisms that can grow on MSA

***Staphylococcus aureus* and *Staphylococcus epidermidis* can both tolerate the salt level in MSA. *S. aureus* alone is able to ferment mannitol. How would you expect their growth to appear on MSA?**

* both colony types will be yellow
* ***S. aureus yellow, S. epidermidis pink***
* S. aureus pink, S. epidermidis yellow
* both colony types will be pink

**The role of the pH indicator is**

* to ensure the correct pH of the agar is maintained
* to select organisms that can tolerate an acidic pH
* ***to allow differentiation between organisms that can ferment mannitol and those which cannot***
* to select organisms that can tolerate high salt levels