



# A 'growth' mindset intervention to support chemistry students' transitioning through the Maltese educational system: A longitudinal study.

## Project brief

### Aims & objectives

This longitudinal qualitative study investigates how a Growth Mindset intervention may support chemistry students' educational trajectories during critical post-secondary transitions. The study examines mindset shifts alongside broader factors influencing STEM retention by embedding mindset practices into Year 11 chemistry teaching and tracking students' pathways over four years.

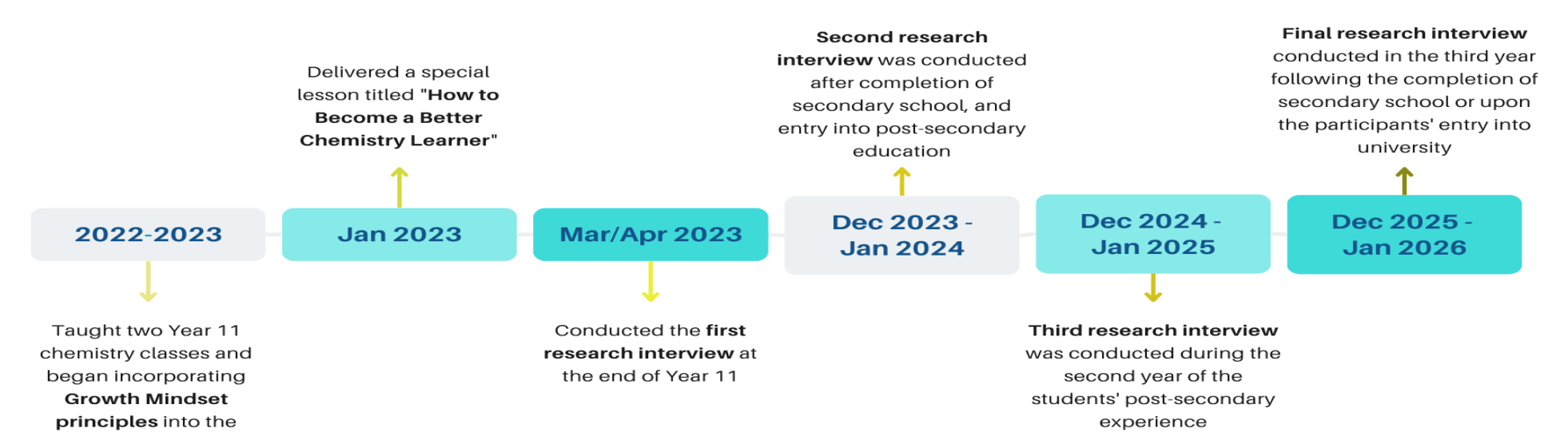
## Methodology

This qualitative longitudinal study tracked 20 Year 11 chemistry students over a four-year period. The intervention was fully embedded within their chemistry course, where Growth Mindset principles were continuously reinforced through classroom practices. A key feature was the special lesson *How to Become a Better Chemistry Learner*, which introduced Growth Mindset theory explicitly and encouraged students to reflect on how it related to their own learning challenges.

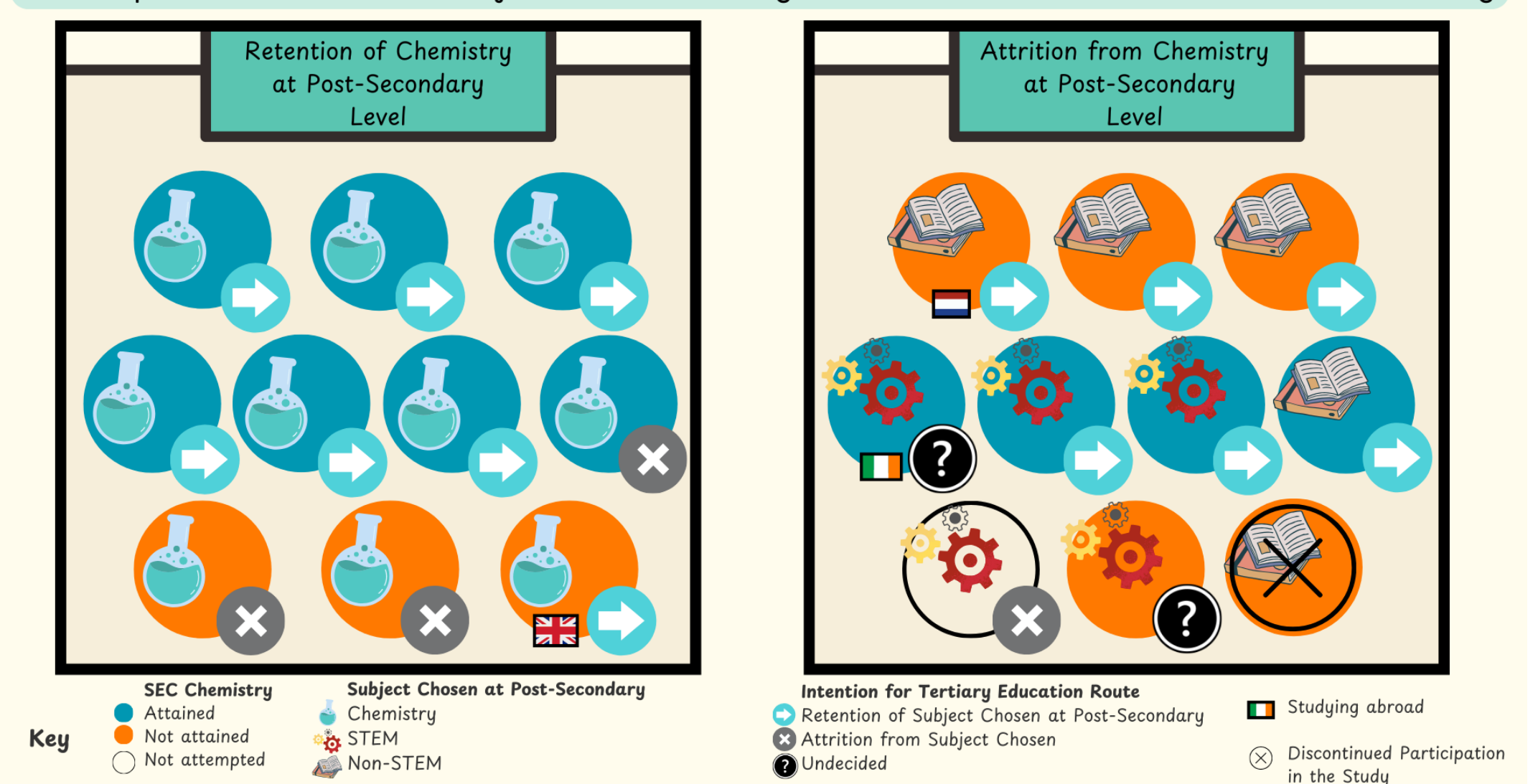
Data collection included guided written exercises and annual semi-structured interviews designed to explore students' prevailing mindsets, beliefs about ability, and approaches to academic obstacles. In parallel, the researcher maintained a personal reflective journal to capture evolving insights and classroom dynamics.

Reflexive Thematic Analysis was applied to identify cross-case patterns, while Interpretative Phenomenological Analysis (IPA) was used to examine the unique learning trajectories of selected individual participants in greater depth.

### TIMELINE OF THE STUDY



### Participants' Educational Trajectories Following Growth Mindset Intervention in Chemistry



The figure illustrates participants' educational trajectories following the Growth Mindset intervention in Chemistry, tracing their paths after leaving secondary school and capturing their future intentions at the end of their post-secondary course, based on three years of longitudinal interviews.

## Results & conclusions

Three mindset profiles emerged: fixed, growth-oriented, and ambivalent. Ambivalent students made genuine efforts to adopt a growth mindset but were frequently undermined by external influences, including messages from influential adults framing success as innate and structural barriers reinforcing fixed beliefs.

Their experiences show that fostering growth requires more than personal effort; it demands supportive environments that validate learning through persistence. These findings highlight the critical need for both individual and systemic approaches to promoting resilience and retention in STEM education.

