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VIRTUAL EXPERIENCE

Investigating the Relationships between the Learning Ecology, Self-efficacy, and Academic Achievement during Covid-19

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Agenda

Introduction - Purpose, research questions and variables

The Context - Curriculum, Assessment, Students & the impact of COVID-19

The MAP Test - Domains & prior research

Self-efficacy - Domains, sample items & prior research

The Learning Ecology - Domains, sample items & prior research

Questions & Answers

Purpose

The study:

measure the associations between cycle two **students' self-efficacy** beliefs, perception of the **learning ecology**, and **academic achievement and growth**

Impact of the COVID 19 pandemic:

swift movement from face-to-face instruction to synchronous, asynchronous online and blended learning

Modifications:

instruments that measure students' perspectives on the predictor variables

The Research Variables

DEPENDENT VARIABLES	INDEPENDENT VARIABLES
Achievement & Growth ▪ Math ▪ Science ▪ Language	**Student's Self Efficacy** ▪ Math; Science; Language; IT **Learning Ecology** ▪ Math; Science; Language; IT **Demographic** ▪ Grade, SES, . . . etc.

THE CONTEXT
DR. JAKE

Context

- **Schooling in the UAE**
  - K-12 Education
  - Public & Private Schooling
  - Education Reform

Types of Curricula

https://psp.adek.gov.ae/en/investors

Curriculum Requirements

- National requirements + 4 Arabic Subjects

Assessment

- As per National Curriculum Statutory Requirements
- Guided by UAE Inspection Framework
- MOE Equivalency for Foreign Curriculum Schools

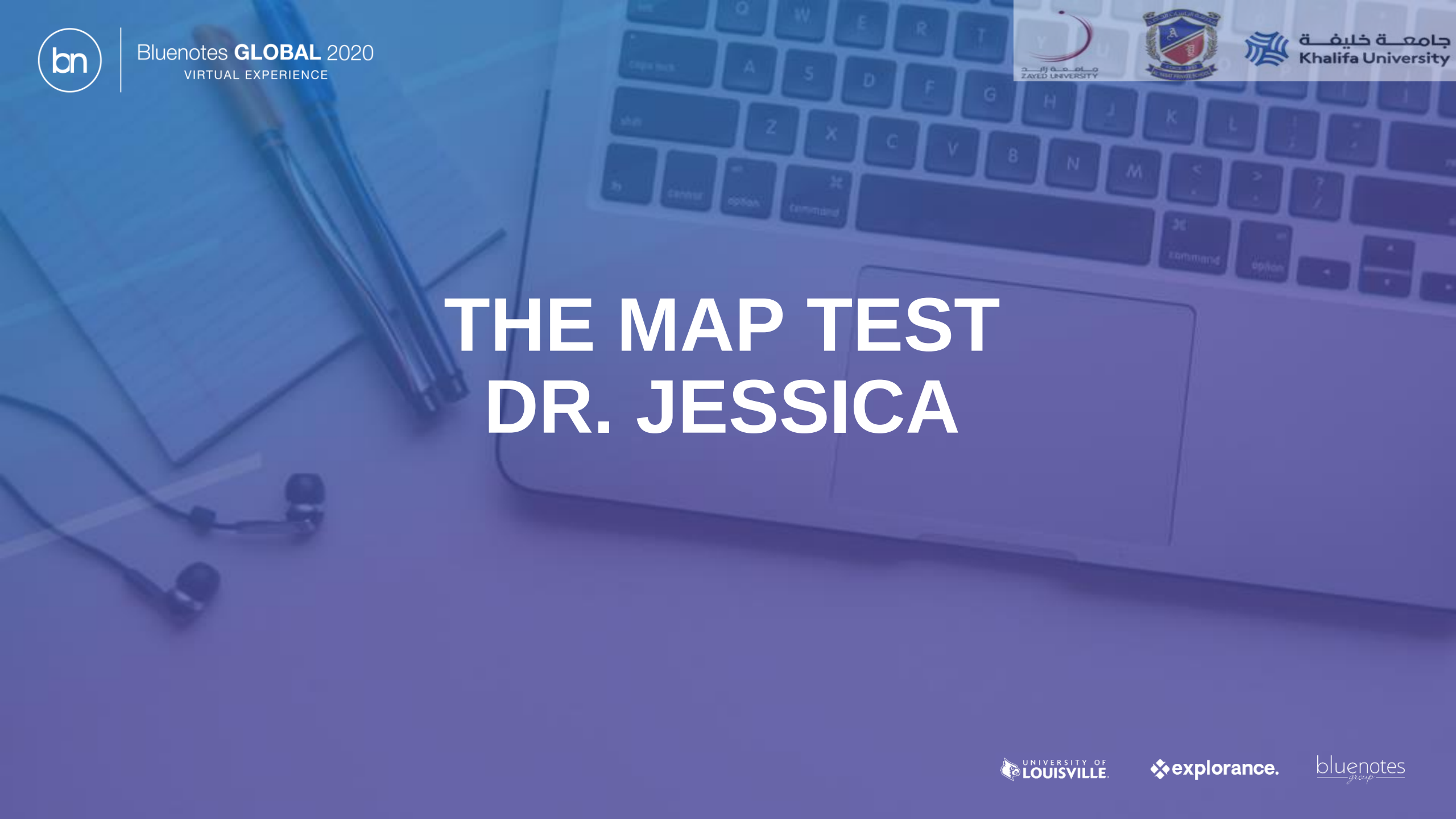
Students

Public Schools Number	Teachers Number - Public	Students Number - Public	Private Schools Number	Teachers Number - Private	Students Number - Private
619	21,153	288,794	643	50,869	810,537

https://www.moe.gov.ae/En/OpenData/pages/home.aspx

The Impact of COVID-19

- **School Closure to Reopening Procedures/policies**
- **Student Registrations**
- **Staffing Challenges**
  - Distance learning & Re-entry
- **Resource Priorities**



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THE MAP TEST
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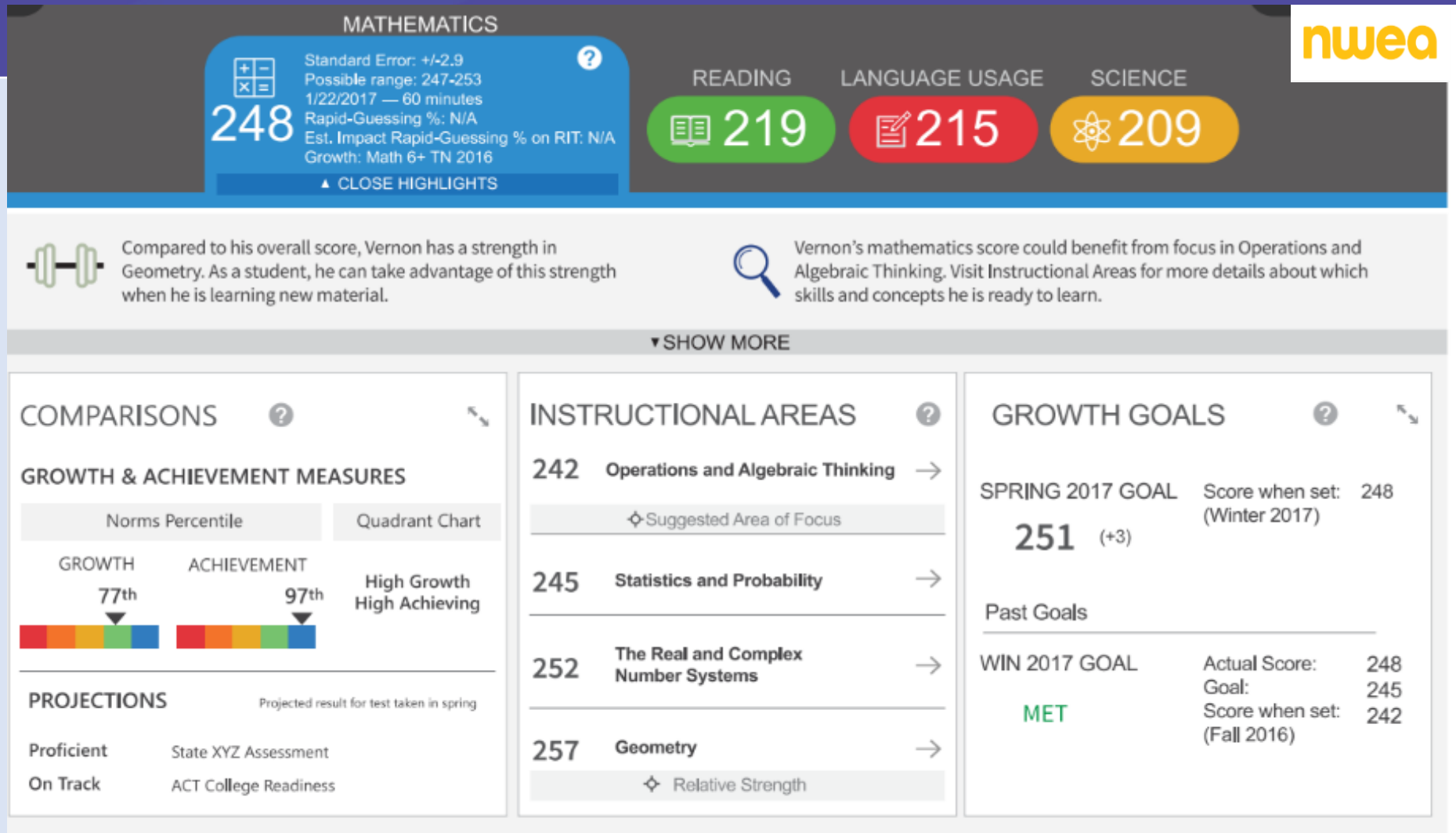
MAP Growth Assessment

- **Tracks** growth & achievement (K-12)
- Used **internationally**
- **Computer adaptive**
- Administered **2-3** times/year
- Strong **reliability** indices (NWEA, 2011)



Why use MAP growth assessment

Common measure- all schools following the American curriculum must take it

achievement score **growth score** **engagement metrics** (NWEA, 2017)

Achievement Status and Growth Report –

Achievement Status				Growth							
Fall 2015		Winter 2016		Student						Comparative	
RIT Range (+/- SEM)	Percentile Range (+/- SE)	RIT Range (+/- SEM)	Percentile Range (+/- SE)	Projected RIT	Projected Growth	Observed Growth	Observed Growth SE	Growth Index	Met Projected Growth	Conditional Growth Index	Conditional Growth Percentile
208-**211**-214	57-**67**-75	217-**220**-223	72-**78**-84	215	4	9	4.3	5	Yes	1.0	84
204-**207**-210	45-**54**-62	212-**215**-218	57-**66**-73	211	4	8	4.23	4	Yes‡	0.8	80
210-**213**-216	62-**70**-77	214-**217**-220	63-**71**-78	216	3	4	4.21	1	Yes‡	0.2	56

Includes measurement of rapid guessing

J	K	L	M	N
Test RIT Score	Rapid-Guessing %	Test RIT 10 Point Range	Assessment Name	Mathematics: Geometry
233	11	231-240	MAP: Math 2-5	231-240
229	6	221-230	MAP: Math 2-5	241-250
233	22	231-240	MAP: Math 2-5	251-260

(NWEA, 2020)

Research with MAP

Educational studies utilizing MAP achievement and growth data

Ex. Blended learning (Fazal & Minaz, 2019; Balentyne & Varga, 2017; Koenig, 2018)

Minimal research in using MAP achievement and growth data in relation to students' self-efficacy and/or the learning environment

Ex. Reading (Hager, 2017; Sefkow, 2016)

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SELF-EFFICACY
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Self-efficacy – Bandura

Self-efficacy is defined as the belief or perception that one is capable of taking the necessary actions to succeed at a given task (Bandura, 1997).

One of the greatest contributor to students' confidence and their ability to achieve in school is their **past performance** (Bandura, 1993).

Self-efficacy

Scales	Description
1-Mastery Experiences	Having success in mastering a task.
2-Vicarious Experiences	Observing people around us succeed.
3-Social Persuasions	Being influenced by people we admire.
4-Overall Disposition (emotional & psychological states)	Your mental state will influence how you judge your self-efficacy.

Self-efficacy

Scales	Sample Statements
1-Mastery Experiences	I can learn math topics quickly.
2-Vicarious Experiences	I can apply what I learn from observing others in my science lab class.
3-Social Persuasions	My friends have told me that I am good in reading/writing.
4-Overall Disposition (emotional & psychological states)	I enjoy using computers to do my schoolwork.

Self-efficacy – Previous Research

Ketelhut, D. J. (2004) The Impact of Student Self-efficacy on Scientific Inquiry Skills: An Exploratory Investigation in River City, a Multi-user Virtual Environment. Journal of Science Education and Technology, Vol. 16, No. 1, February 2007 (2006). DOI: 10.1007/s10956-006-9038-y.

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THE LEARNING ECOLOGY
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The Learning Ecology - Sample Items

Scale	Example
1. Personal relevance	What I learn in math is relevant to my daily life.
2. Uncertainty	I learn that there are many ways to solve math problems.
3. Critical voice	I feel safe questioning what or how I am being taught in the math class.
4. Shared control	In math class, I help the teacher to plan what I am going to learn.
5. Student negotiation	In math class, other students may ask me to justify my answers.

(Johnson & McClure, 2004, p. 68; Taylor et al., 1997, p. 296).

Prior Research on Learning Ecology

Language

Language learning and teachers' attitudes (Käfer et al., 2018)

Using IT and vocabulary Learning (Huang et al., 2016)

Math

The instructional quality and students' achievement (Arens, & Möller, 2016)

Classroom environment, math self-efficacy & math performance (Fast et al., 2010)

Science:

Perceptions of constructivist learning; sophisticated epistemological beliefs; teachers' & students' science self-efficacy; students' achievement in chemistry (Pamuk, Sungur, & Oztekin, 2017)

Blended Learning

Teacher's engagement and students' perception of e-learning (Kerzic, et al., 2019)

Summary

The research study investigates the complex interrelationships between cycle two students' academic achievement and growth, demographic variables, learning ecology, and self-efficacy in language, math, science, and virtual learning tools and skills in UAE private schools.

The MAP growth test measures achievement and growth.

Self-report surveys measure self-efficacy, learning ecology and crucial computer skills.

The study will identify the predictors of students' achievement to reinforce students' success and recommend plans for remedial work.

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Q&A!

THANK YOU!
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