

# In-service Teacher Efficacy

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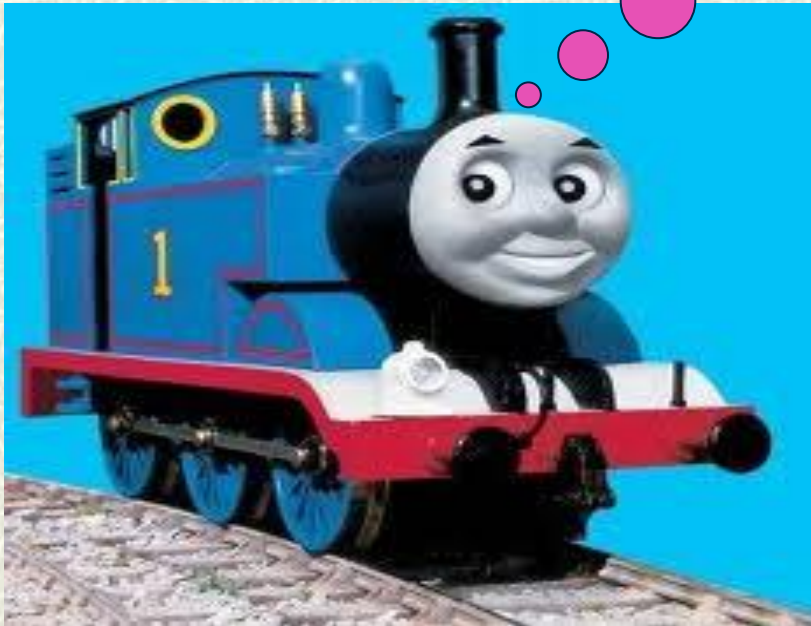
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# Introduction

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I think I can!  
I think I can!  
**I THINK I CAN!**



The brave little engine pushes its way to the hilltop, with a high sense of efficacy for doing so.

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# What is *Teacher Efficacy*?

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A construct arising out of self-efficacy, refers to teachers' "belief in their capability to perform specific teaching tasks at a specified level of quality in a given specified situation" (Dellinger, Bobbett, Olivier, & Ellett, 2007, p.2).

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# Why Teacher Efficacy?

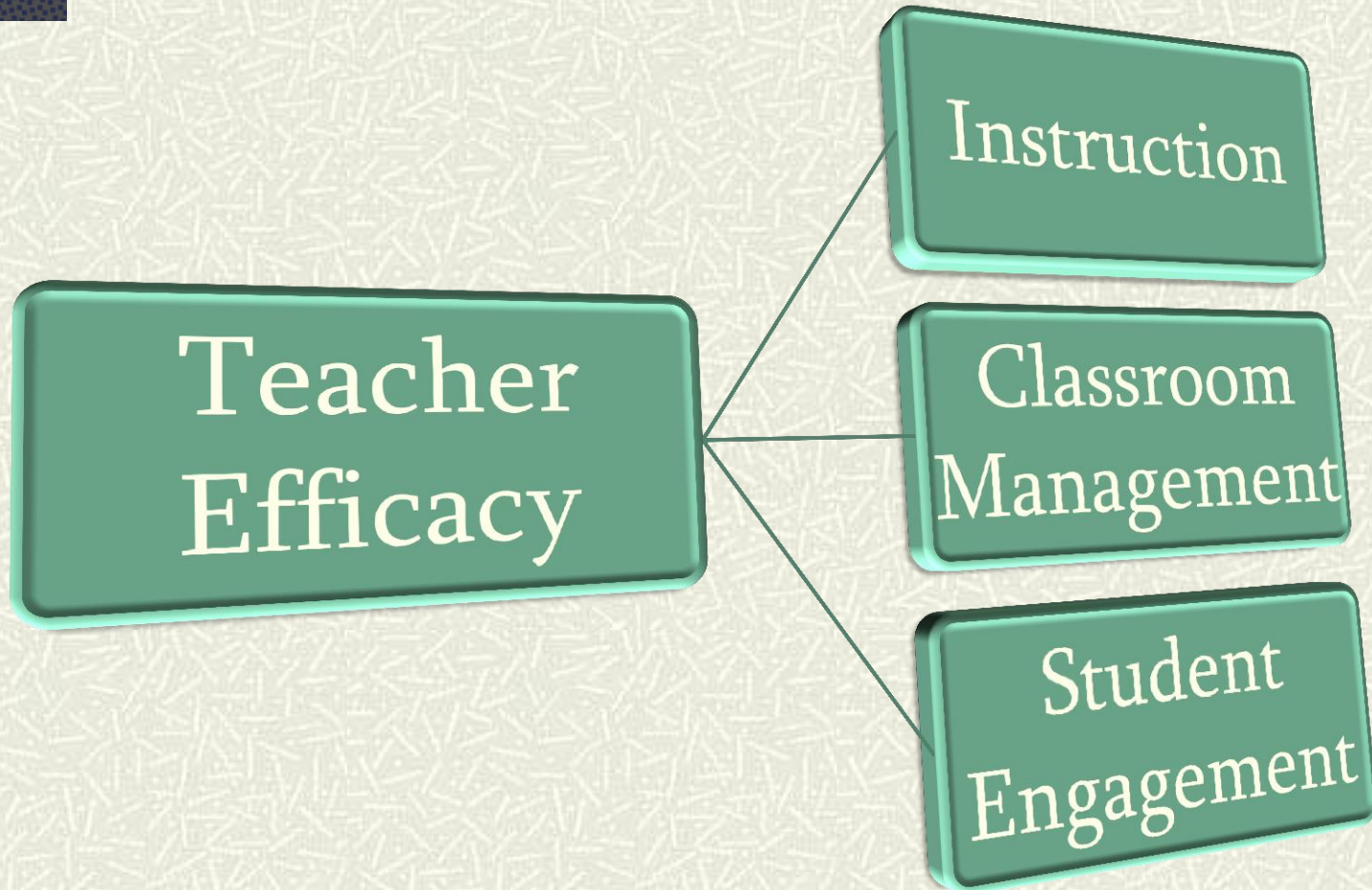


Research links teachers' **beliefs** about their capabilities to influence student motivation and achievement to their

- effort on the job
- persistence in overcoming obstacles
- resilience in the face of failure
- levels of stress/depression experienced in managing demanding situations

all of which change over the course of their careers as their experiences grow (Bandura, 1977).

# Dimensions of Teacher Efficacy



# Teacher efficacy for Instruction

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Teachers' perceived ability to

- create classrooms conducive to learning
- gauge students' comprehension
- adjust questions, strategies, explanations, and assessment

to meet students' needs, particularly struggling students

(Colbeck, Cabrera, & Marine, 2002; Cousins & Walker, 2000; Tschannen-Moran & Hoy, 2001).

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# Teacher efficacy for Classroom Management

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Teachers' perceived ability to

- respond to and manage disruptive student behaviour
- establish expectations and rules to guide classroom behaviour

(Colbeck, Cabrera, & Marine, 2002; Cousins & Walker, 2000; Tschannen-Moran & Hoy, 2001).

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# Teacher efficacy for Student Engagement

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Teachers' perceived ability to

- develop relationships with students and their families
- motivate students to think creatively and to value learning
- improve student understanding and self-efficacy, and to help struggling students

(Colbeck, Cabrera, & Marine, 2002; Cousins & Walker, 2000; Tschannen-Moran & Hoy, 2001).

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# Research Findings about Teacher Efficacy

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## Efficacious teachers

- plan more (Allinder, 1994)
  - persist longer with struggling students (Ashton & Webb, 1986; Gibson & Dembo, 1984; Woolfson & Brady, 2009)
  - are less critical of student errors (Ashton & Webb, 1986)
  - willingly accept risks of negative feedback from a supervisor (Ross, 1992)
  - decisively improve practice using feedback from parents and administration (Tschannen-Moran & Hoy, 2007)
  - effectively managed their classrooms (Saklofske, Michayluk, & Randhawa, 1988; Sridhar and Javan, 2011).
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# Social Cognitive Theory

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Bandura (1977) proposed two components of efficacy beliefs:

- # **efficacy expectation** – individual's conviction that he/she has the ability, knowledge and skills to perform the desired goals/outcomes.
  - # **outcome expectancy** – individual's belief that a given behaviour or action will indeed lead to expected outcome(s).
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# Social Cognitive Theory

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Teachers with both high efficacy expectations and high outcome expectancy are more likely to be successful than teachers with high efficacy expectation and low outcome expectancy, even if professionally qualified

(Bandura, 1977; 1979; 1999).

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# Social Cognitive Theory

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Teachers who anticipate failure with certain pupils put less effort into preparing and delivering instruction, giving up easily at the first sign of difficulty, even if they know of alternative strategies that can assist these pupils. Self-efficacy beliefs become self-fulfilling prophecies, validating beliefs either of capability or of incapacity (Tschannen-Moran & Woolfolk Hoy, 2007).

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# Aim

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The aim of this study was to examine in-service Diploma of Education teachers' perception of their teaching efficacy before and after training.

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# Background

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- # The UWI, St Augustine Campus, School of Education.
  - # In-service Postgraduate Diploma in Education programme (blended).
  - # Secondary teachers (content knowledge).
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# Research Questions

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- # What is the relationship among the three dimensions of teacher efficacy?
  - # Are there differences among the three dimensions of teacher efficacy regarding teacher demographics such as, curriculum area, age, gender and years of service?
  - # Are there changes in teachers' perception of efficacy post training?
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# Methodology

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## Quantitative

### # Survey Design: Two Phases

- Phase 1: First week of training after a lecture on teacher efficacy (July).
  - Phase 2: At the end of the training (April following year).
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# Hypotheses

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- $H_0$ : There are no relationships among in-service teachers' efficacy for classroom management, student engagement, and instructional practices.
- $H_0$ : There is no difference in in-service teachers perception of teacher efficacy by gender.
- $H_0$ : There are no differences in in-service teachers perceptions of teacher efficacy by curriculum area of specialisation, years of service or age of teachers.
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# The Sample

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- # The participants from two cohorts,  $n = 335$ 
    - Cohort 1 (2011-2012),  $n = 157$
    - Cohort 2 (2012-2013),  $n = 178$ .
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# Data collection instrument

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Questionnaire comprising two sections

# Section A – demographic data

# Section B - The Teacher Efficacy Scale

*(Long form)* (Hoy & Woolfolk, 1993)

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# Preliminary Findings: Phase One



# Demographic Data

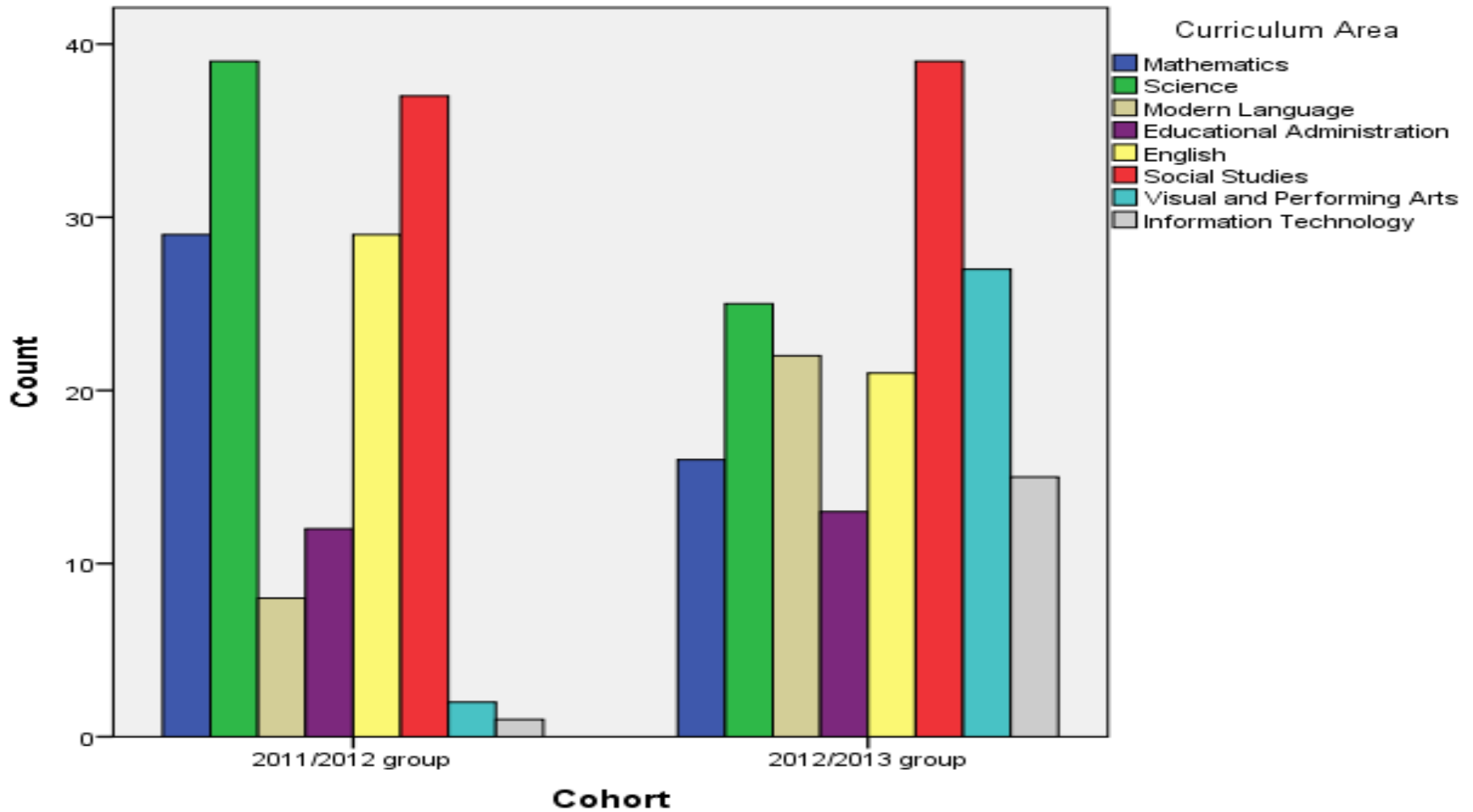
Cohort	Sex		Age			Years of service		
	M	F	20-30	31-40	41- 59	0-10	11-20	≥ 21
2011/2012	43	113	60	60	36	105	38	13
2012/2013	31	160	58	75	44	120	43	18

# Demographic data

	Age	Years of Service
Mean	35.4	9.97
Standard Deviation	7.592	6.667
Range	37	29
Minimum	22	1
Maximum	59	30
Missing Data	6	1

# Demographic Data

## Subject Area



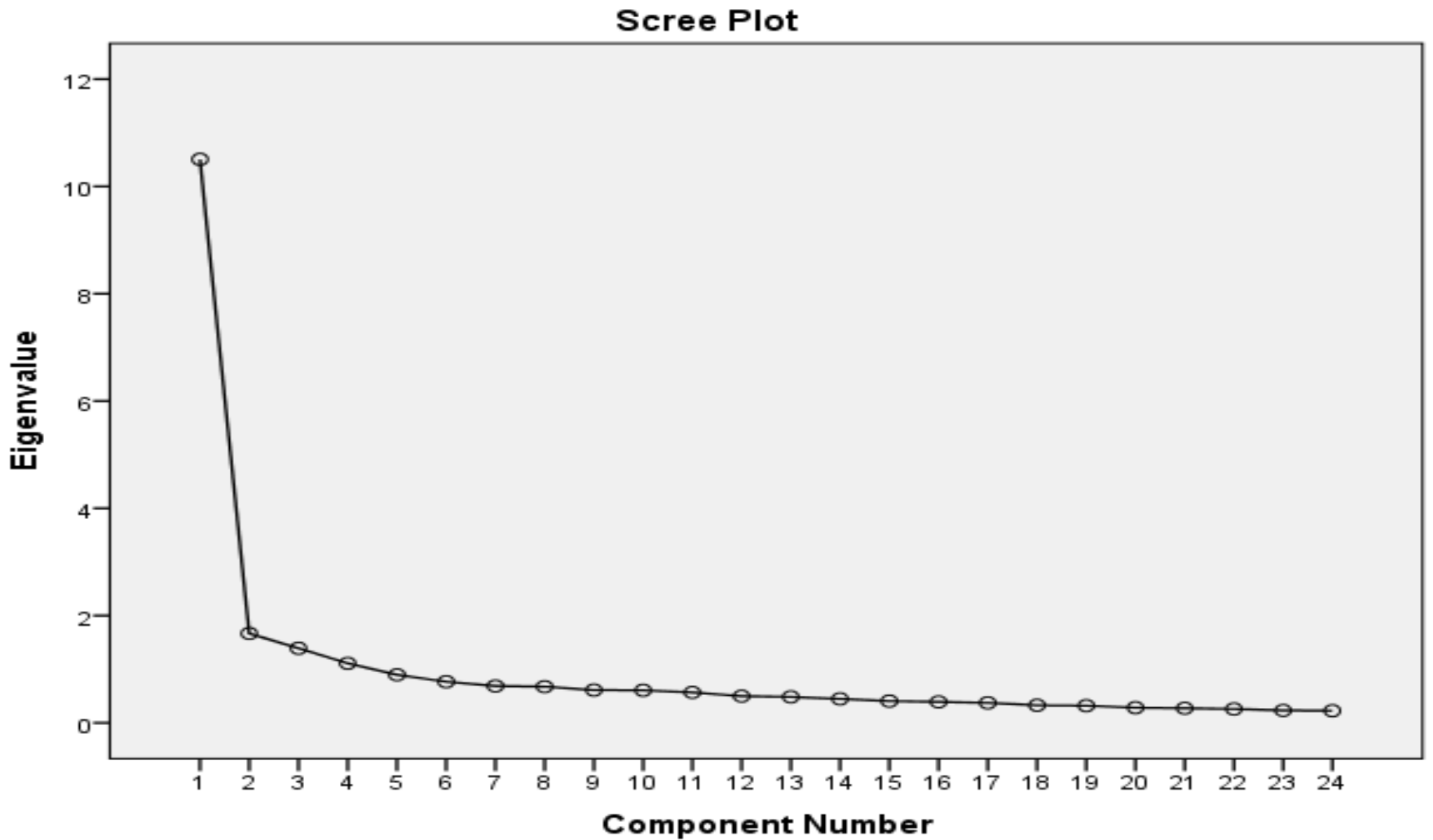
# Data Reduction

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- # Principal Components Factor Analysis
  - # Eigenvalues greater than 1
  - # Varimax rotation
  - # Absolute values less than .30 suppressed.
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# Scree Plot



# Data Reduction: Factor Analysis

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- # Four factors solutions accounting for 61 % of the total variance among the 329 responses to the 24 Likert-type item questionnaire.
  - # Absolute values ranged from .499 to .817  
factor 1, .499 - .794; factor 2 , .499 - .804;  
factor 3, .499 - .817; factor 4, .562 - .597.
  - # Slight variations in factors demonstrated by Hoy and Woolfolk (1993).
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# Data Reduction: Factor Analysis

Factors	Items Hoy and Woolfolk	Items: Factors from Factor analysis
Efficacy in Classroom Management	3,5, 8,13,15,16,19,21	3,5,13,15,16,19,21
Efficacy in Student Engagement	1,2,4,6,9,12,14,22	1,2,4,6,9,12,14,22
Efficacy in Instructional Practices	7,10,11,17,18,20,23,24	7,8,11,17,20
		10,18,23,24

# Data Reduction: Factor Analysis

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- # The items in the 4<sup>th</sup> factor also had absolute values greater than .401 in factor three.
  - # Subscales were computed for the three factors identified by Hoy and Woolfolk (1993).
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# Central tendency

## Nine-point Likert Scale

	Mean	Standard Deviation
Student Engagement	6.253	1.05
Instruction	6.778	1.28
Classroom Management	5.908	1.028

# Central Tendency

	Sex		Age-Range			Number of years teaching		
	M	F	20 -30	31-40	41 - 59	0 -10	11-20	≥ 21
Engage	6.29 (1.10)	6.24 (1.05)	6.07 (.90)	6.31 (1.10)	6.47 (1.17)	6.17 (1.03)	6.29 (1.04)	6.73 (1.14)
Instruct	6.93 (1.65)	6.73 (1.19)	6.49 (.88)	6.76 (1.06)	7.25 (1.89)	6.59 (.98)	6.92 (1.43)	7.74 (2.15)
Manage	5.99 (1.11)	5.88 (1.08)	5.69 (.87)	5.99 (1.03)	6.15 (1,17)	5.82 (.97)	5.92 (1,13)	6.50 (.99)

# Central Tendency

	Curriculum Area							
	M	S	E	SS	ML	EA	IT	V
Engage	<b>5.819</b> <b>(.835)</b>	5.821 (1.821)	6.493 (.948)	6.221 (.948)	6.133 (1.031)	<b>7.244</b> <b>(.945)</b>	6.543 (.907)	6.252 (1.055)
Instruct	<b>6.326</b> <b>(.931)</b>	6.556 (.923)	6.768 (.990)	6.517 (1.047)	6.821 (921)	<b>7.985</b> <b>(2.331)</b>	7.295 (1.798)	6.772 (1.197)
Manage	<b>5,567</b> <b>(.769)</b>	5.590 (1.003)	5.990 (1.023)	5.856 (1.069)	5.913 (1.291)	<b>6.870</b> <b>(.781)</b>	6.091 (.818)	5.904 (1.033)

# Hypothesis one

$H_0$ : There are no relationships among in-service teachers' efficacy for classroom management, student engagement, and instructional practices.

Significant positive correlations among all dimensions of teacher efficacy, at the 0.01 level (2-tailed).

	$r$	$r^2$
Student engagement and classroom management	.708	.49
Student engagement and instructional strategies	.587	.345
Instructional strategies and classroom management	.614	.36



# Hypothesis two

$H_0$ : There is no difference in perception of teacher efficacy by gender among in-service teachers.

Independent samples t-test revealed no gender differences in teachers perceptions of efficacy.

	t	df	sig
Engagement	.278	323	.781
Instruction	1.097	329	.274
Classroom management	.824	325	.410

# Hypothesis Three

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$H_0$ : There are no differences in perceptions of teacher efficacy among in-service teachers by curriculum area of specialisation, years of service, and age of teachers.

Three-way ANOVA 3x 3 x 8 factorial design was conducted for each dependent variable:

- Engagement
  - Instruction
  - Classroom management
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# Student Engagement Efficacy

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# **Overall analysis:**  $F = 2.013, p = .001$

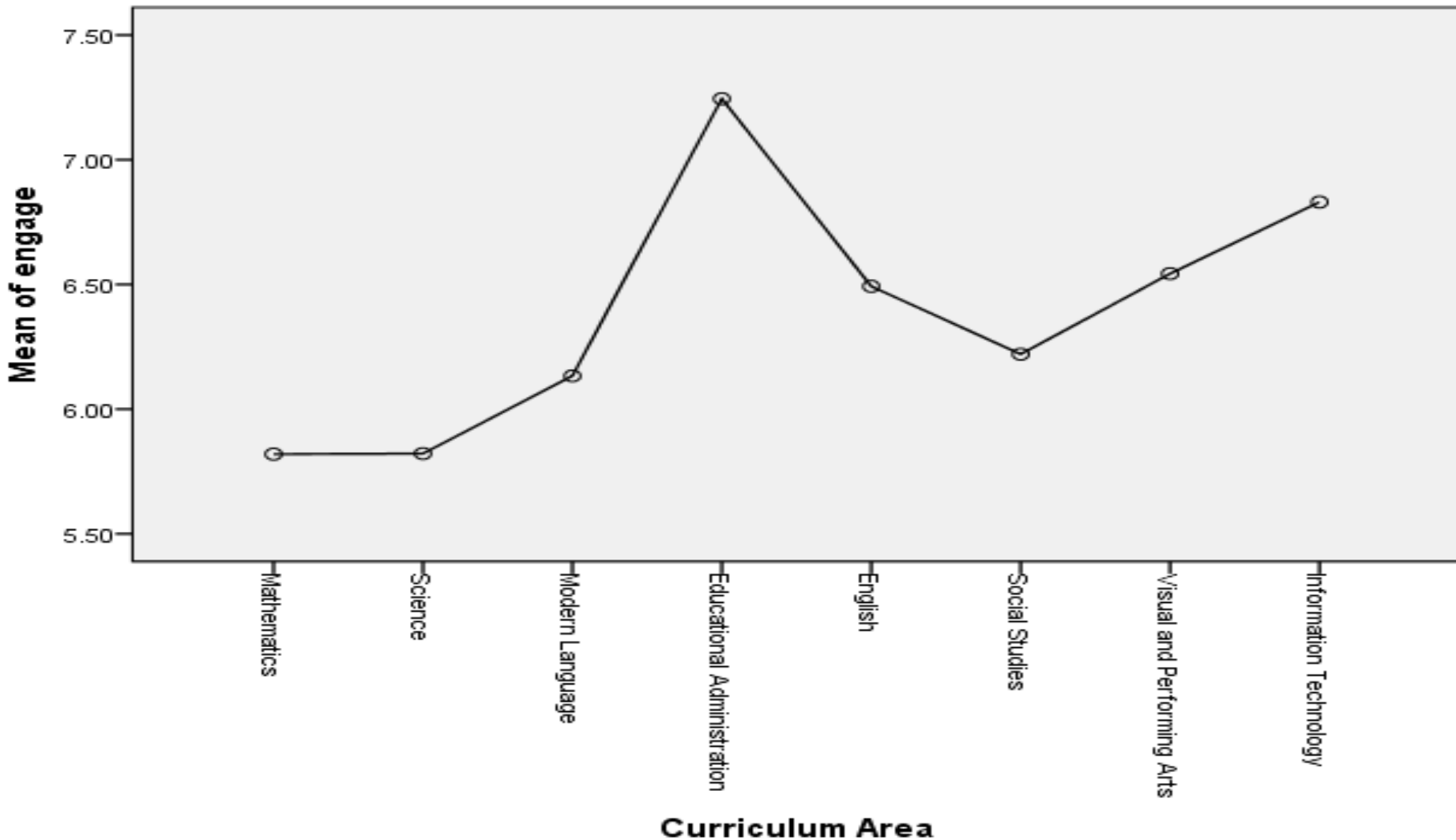
# **Main Effects:**

- Only the main effect for curriculum area was significant  $F(7,317) = 4.949, p = .0001$ .
- The small effect size ( $\eta^2 = .111$ ) indicates a small mean-scores difference across curriculum areas.

# **No difference** in engagement efficacy for age and years of service.

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# Student Engagement: Mean Curriculum Area



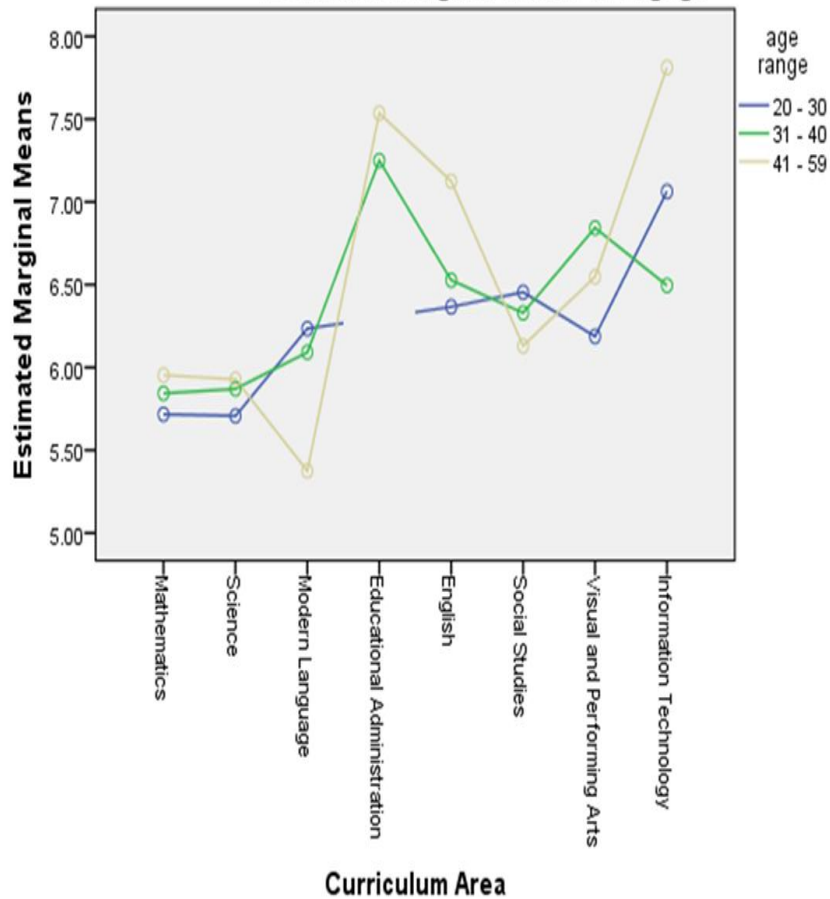
# Student Engagement Efficacy Interaction Effect

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No significant interaction effects indicated:

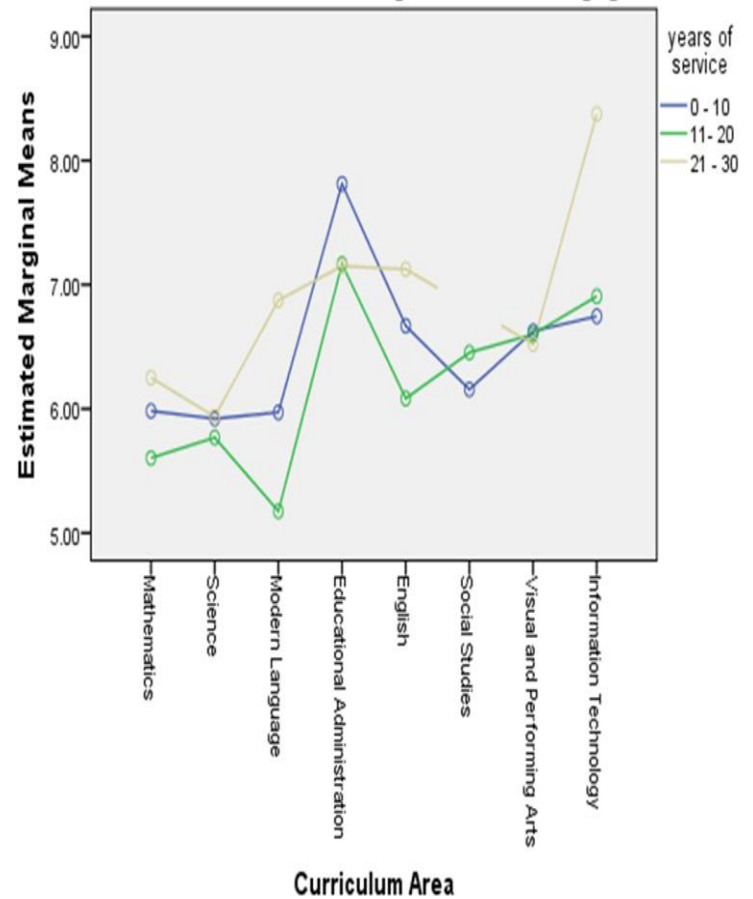
- Curriculum\*age (  $F = 1.282$ ,  $p = .229$ )
  - Curriculum\* years of service (  $F = 1.383$ ,  $p = .173$ )
  - Age\*years of service (  $F = .084$ ,  $p = .919$ )
  - Curriculum\*age\*years of service (  $F = .065$ ,  $p = .937$ ).
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Estimated Marginal Means of engage



Non-estimable means are not plotted

Estimated Marginal Means of engage



Non-estimable means are not plotted

# Instruction Efficacy

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# **Overall analysis:**  $F = 1.857, p = .002$

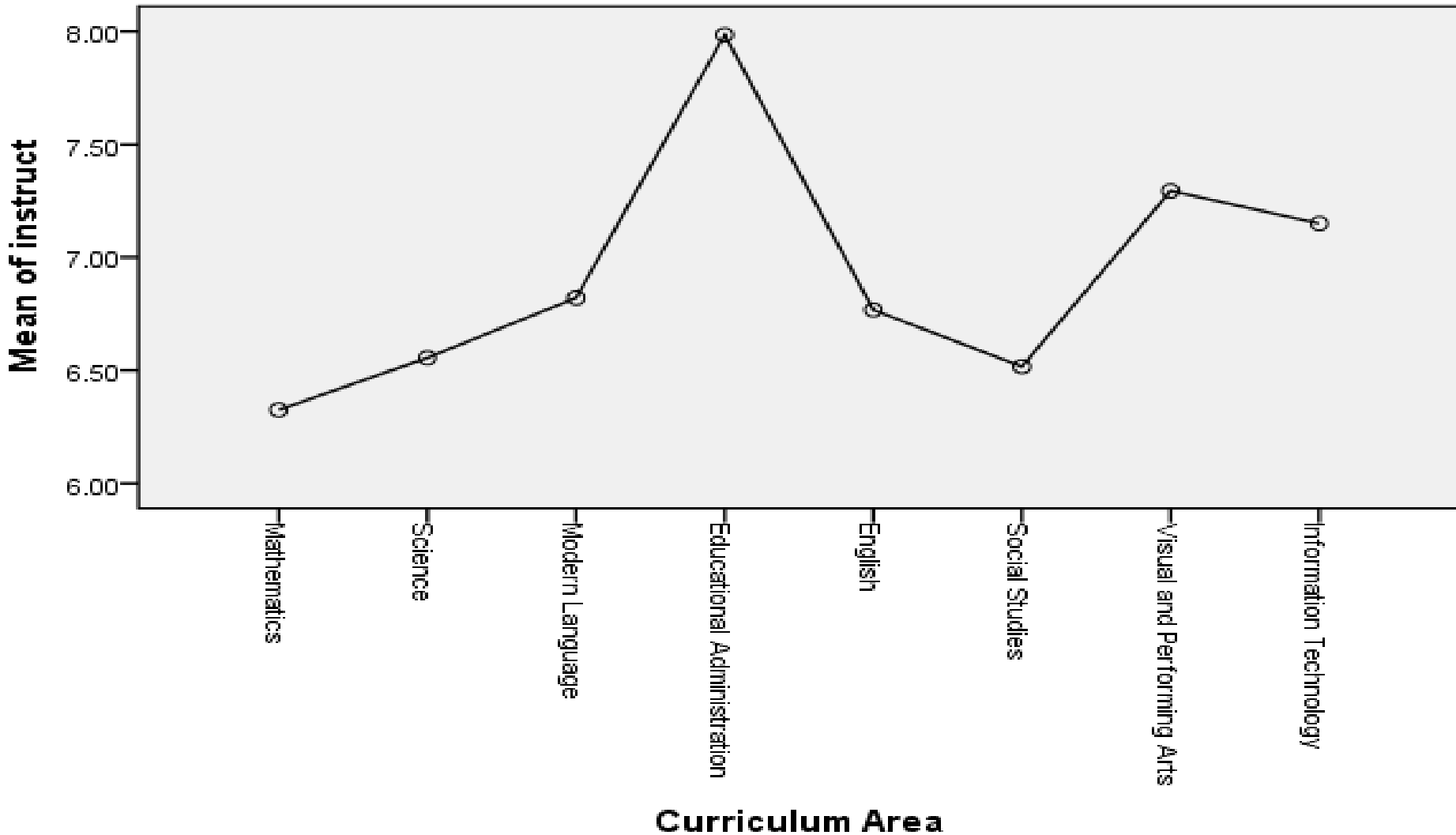
# **Main Effects:**

- Only the main effect for curriculum area was significant  $F(7,322) = 2.261, p = .030$ .
- The small effect size ( $\eta^2 = .051$ ) indicates a small mean-scores difference across curriculum areas.

# **No difference** in instruction efficacy for age and years of service.

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# Instruction Efficacy: Curriculum Area





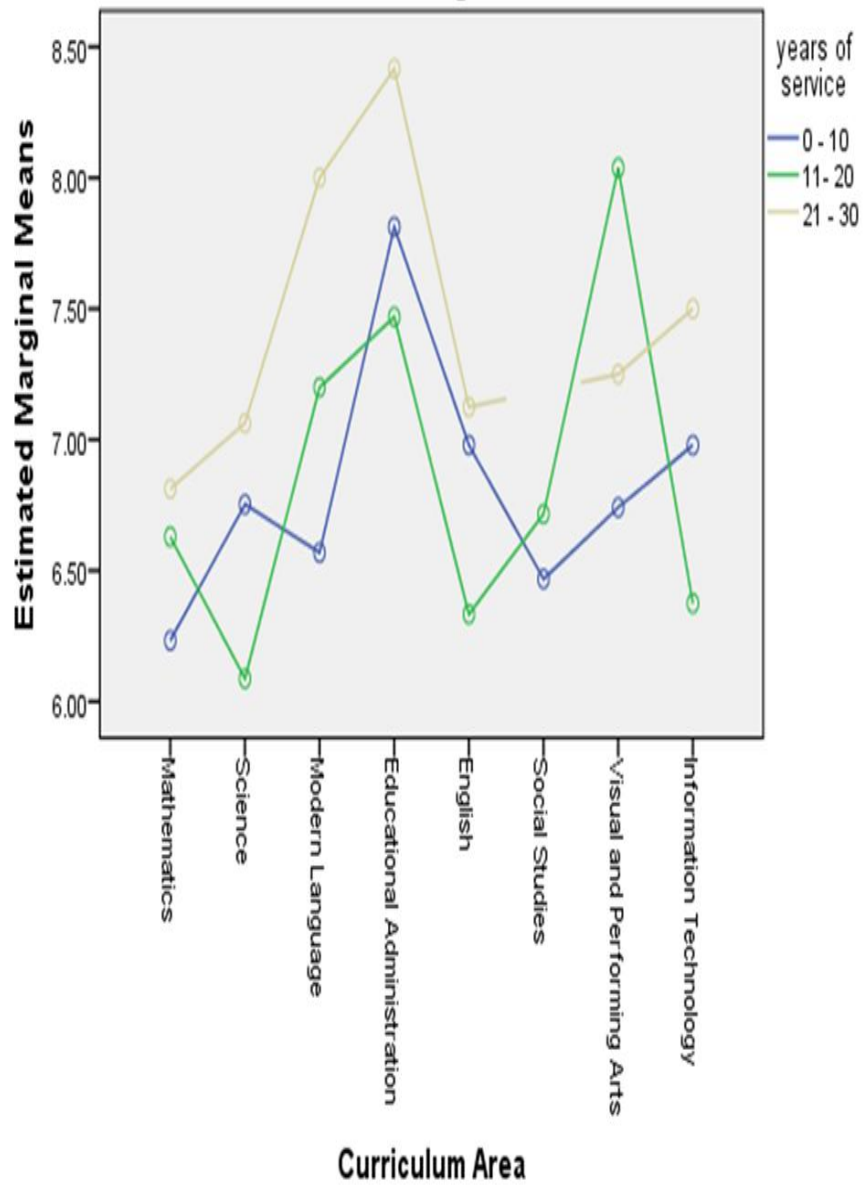
# Instruction Efficacy Interaction Effect

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No significant interaction effects indicated:

- Curriculum\*age (  $F = .600$ ,  $p = .842$ )
  - Curriculum\* years of service (  $F= 1.269$ ,  $p =.237$ )
  - Age\*years of service (  $F = .315$ ,  $p = .730$ )
  - Curriculum\*age\*years of service (  $F= .233$ ,  $p = .792$ ).
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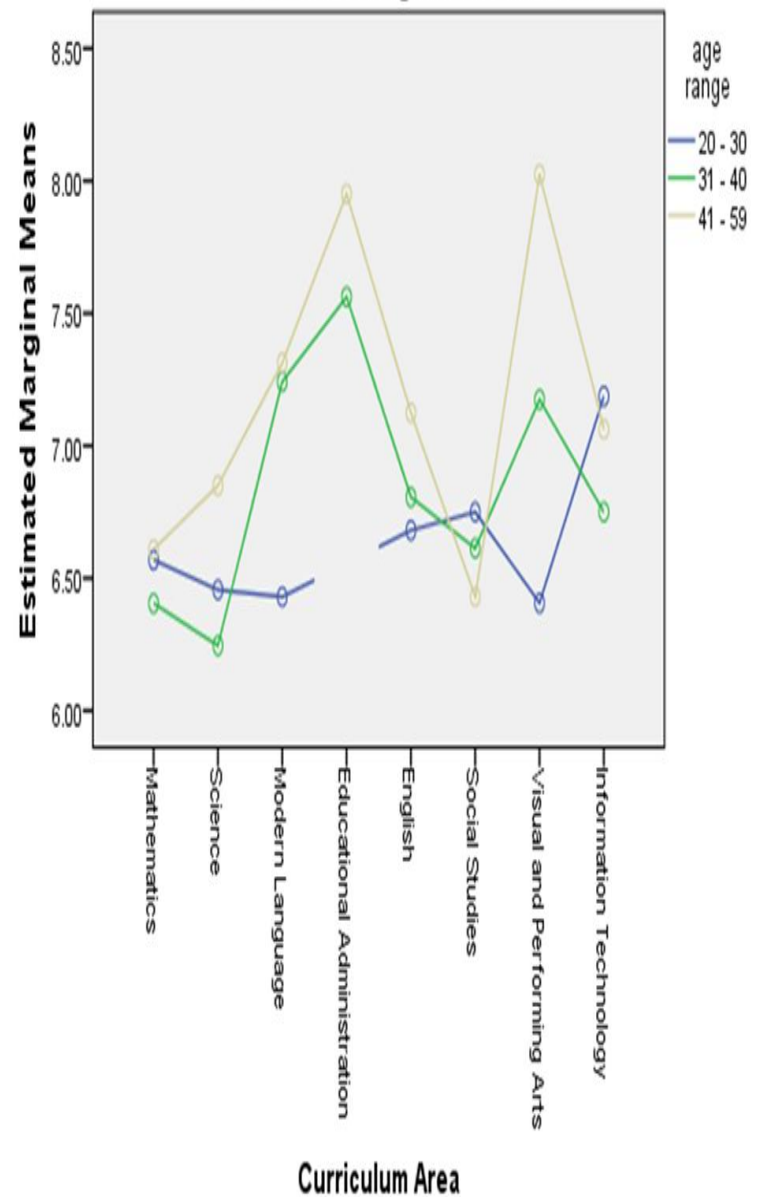
### Estimated Marginal Means of instruct



Curriculum Area

Non-estimable means are not plotted

### Estimated Marginal Means of instruct



Curriculum Area

Non-estimable means are not plotted

# Classroom Management Efficacy

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# Overall analysis:  $F = 2.062$ ,  $p = .0001$

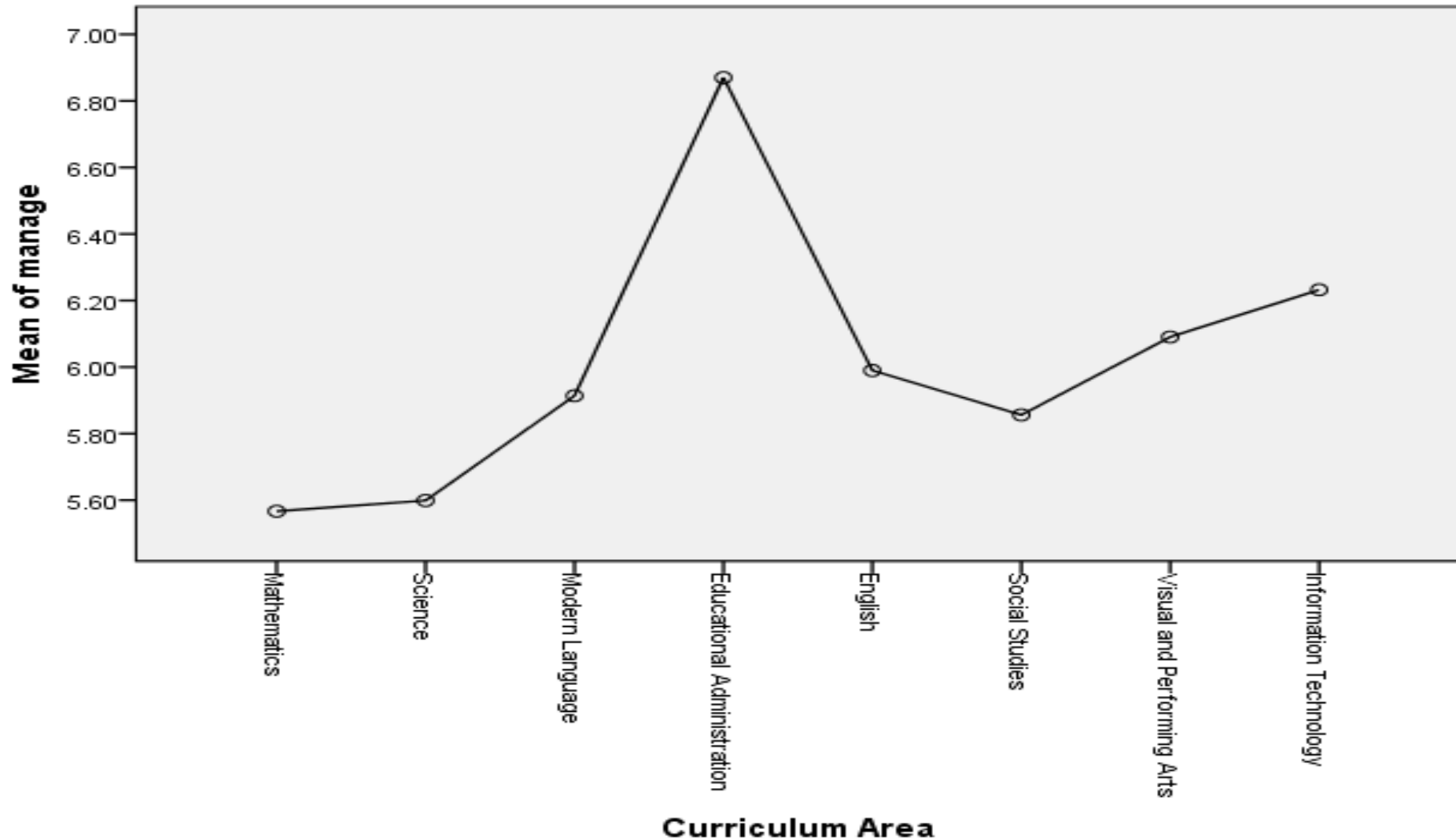
# Main Effects:

- Only the main effect for curriculum area was significant  $F(7,318) = 3.126$ ,  $p = .003$ .
- The small effect size ( $\eta^2 = .021$ ) indicates a small mean-scores difference across curriculum areas.

# No difference in classroom management efficacy for age and years of service.

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# Classroom Management Efficacy: Curriculum Area



# Classroom Management Efficacy Interaction Effect

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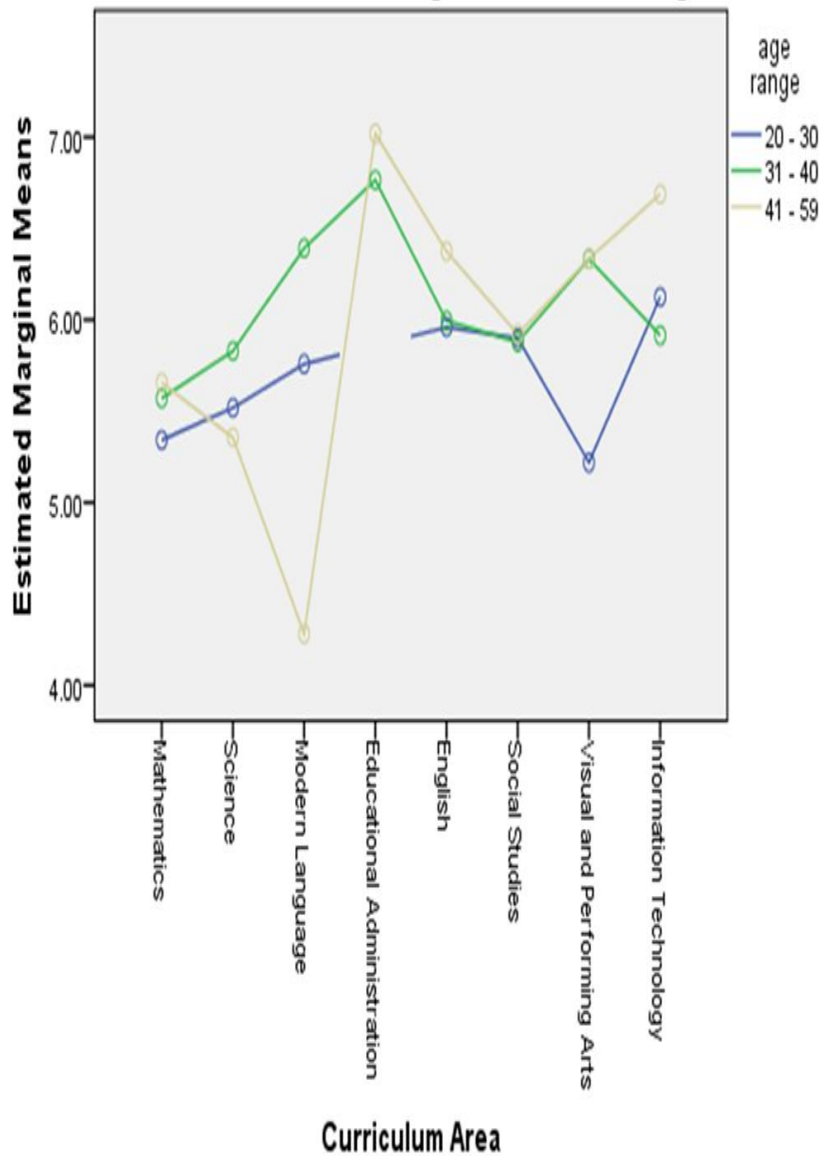
## # Significant interaction effects indicated:

- Curriculum\*age (  $F = 2.655$ ,  $p = .002$ )
- Curriculum\* years of service (  $F = 2.240$ ,  $p = .010$ )

## # No significant interactions indicated:

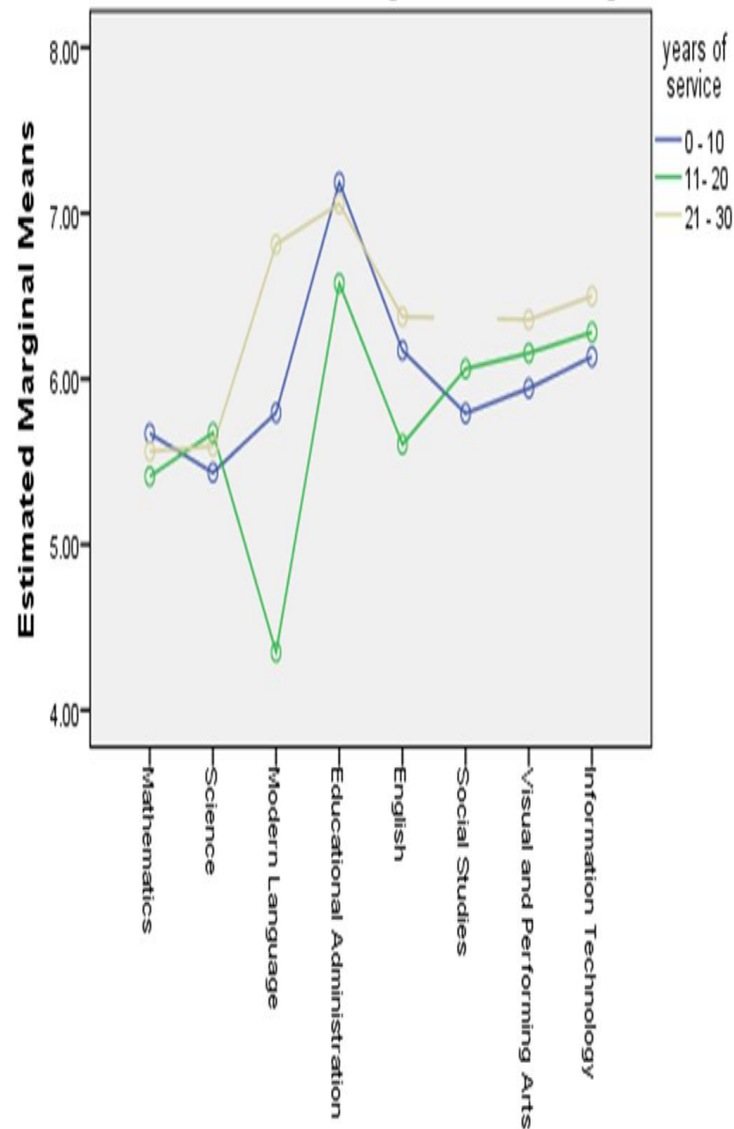
- Age\*years of service (  $F = .052$ ,  $p = .949$ )
  - Curriculum\*age\*years of service (  $F = .145$ ,  $p = .865$ ).
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**Estimated Marginal Means of manage**



Non-estimable means are not plotted

**Estimated Marginal Means of manage**



Non-estimable means are not plotted

# Research Conclusions:

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- # The results indicate
    - Positive relationship among the different dimensions of teacher efficacy.
    - There is no gender difference among the different dimensions of teacher efficacy as reported by the in-service teachers.
    - Mathematics and science teachers reported lower teacher efficacy among the different dimensions.
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# Conclusion

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- Educational administration students reported greatest efficacy among the different dimensions.
  - No age difference in teacher efficacy among the different dimensions.
  - No difference in teacher efficacy based on years of service among the different dimensions.
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# Phase Two: Focus

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- # Is there a difference in teacher efficacy post training?
  - # What factors impact on low efficacy in Mathematics and Science Teachers?
  - # Would pedagogical knowledge/skills improve the efficacy of Mathematics and Science Secondary Teachers?
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# QUESTIONS???

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