Bank of Finland

Financial Literacy Conference June 2023

Bank of Finland Museum, Helsinki (Finland)

Monday June 12th, 2023

Delivery Methods in Financial Education

A Comparative Analysis of Face-to-Face Classes, Live Streaming, Videos, and Gaming

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A Premise

1. Financial Literacy matters
2. Financia Literacy is on average low
3. There is the need of Financial Education

FL and good financial behaviors

Stock market participation
(Van Roij et al. 2011, Almenberg and Dreber 2015)

To avoid financial troubles
(Gathergood, 2012, Lusardi and Tufano 2015, French and McKillp 2016)

To be ready for retirement
(Bucher-Koenen and Lusardi 2011, Lusardi and Mitchell 2011, Sekita, 2011, Van Rooij et al. 2012)

To be resilient in case of financial shocks
(de Bassa Scheresberg 2013, Anderson et al. 2017)

FL and Overconfidence
(Kramer 2016, Kim et al. 2020, Allgood and Walstad 2016, Merkle 2017)

A Premise

1. Financial Literacy matters
2. Financia Literacy is on average low
3. There is the need of Financial Education

FL is (on average) low

Comitato per la programmazione e il coordinamento delle attività di educazione finanziaria

GFLEC GLOBAL FINANCIAL LITERACY EXCELLENCE CENTER

TIAA Institute

OECD

PISA

THE WORLD BANK

A Premise

1. Financial Literacy matters
2. Financia Literacy is on average low
3. There is the need of Financial Education

Financial Education increases Financial Literacy

(Fernandes et al., 2014; Xiao and O'Neil, 2016; Lusardi, 2019; Kaiser and Menkhoff 2020, Kaiser et al. 2022)

A Premise

1. Financial Literacy matters
2. Financia Literacy is on average low
3. There is the need of Financial Education

Financial Education: different targets (students, adults, workers, etc.)

(Walstad et al. 2010, Ambuehl et al. 2014, DeHart et al. 2016, Kaiser et al. 2020, Serido 2021, Drever and Else-Quest 2021)

A Premise

1. Financial Literacy matters
2. Financia Literacy is on average low
3. There is the need of Financial Education

Financial Education: different contents delivery methods

(Bartholome et al. 2021, Kalmi and Sihvonen 2021, Morgan 2021, Kalmi and Rahko 2022)

Research Area

What makes financial education successful?

Motivation to learn of the recipients

Delivery methods of the contents (educational tools)

Ergonomics of the program (*e.g. time and efforts required to attend, readability of the materials, etc.)*

Current FL and **difficulty** of the FE curriculum

Quality of the contents

Research Area

What makes financial education successful?

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Quality of the contents

Research Area

What makes financial education successful?

Delivery methods
of the contents
(educational tools)

1 Which delivery options work?

2 Which delivery options are more effective…?

Research Design

What makes financial education successful?

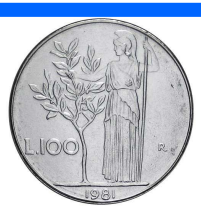
Contents

“Money and its use”
Financial Education curriculum

1 What is money?

2 Money and its evolution

3 Money today



4 Money yesterday

5 Euro and other currencies

6 Cash use limitations

Research Design

What makes financial education successful?

“Money and its use”
Financial Education curriculum

Target

Freshmen students of a Faculty of Economics
(Business Administration, Economics, Finance, etc.)

Timing

October 2022

Research Design

What makes financial education successful?


Motivation to learn of the recipients


Quality of the contents


Ergonomics of the program (*e.g. time and efforts required to attend, readability of the materials, etc.)*


Current FL and **difficulty** of the FE curriculum

Delivery methods of the contents

1 2 3 4

1 Face-to-face class

2 Live-streaming class

3 Online Videos

4 Edutainment

Research Design

What makes financial education successful?

Delivery methods
of the contents

1 2 3 4

1 Face-to-face class

2 Live-streaming class

3 Online Videos

4 Edutainment

Research Design

What makes financial education successful?

15	1,000,000
14	500,000
13	250,000
12	125,000
11	64,000
10	32,000
9	16,000
8	8,000
7	4,000
6	2,000
5	1,000
4	500
3	300
2	200
1	100

Come si chiamava la moneta nazionale italiana prima dell'avvento dell'Euro?

A	Lira	B	Ducato
C	Sesterzio	D	Fiorino

(Financial Literacy)

Delivery methods
of the contents

1 2 3 4

1 **Face-to-face class**

2 **Live-streaming class**

3 **Online Videos**

4 **Edutainment**

Research Design

What makes financial education successful?

Quanto sei convinto della tua risposta?

(Minimo) 1	2	3	4	5 (Massimo)
Provo a indovinare...	*Non molto convinto*	*Abbastanza sicuro*	*Quasi certo*	*Sicurissimo!*
1	2	3	4	5

(Financial Confidence)

Delivery methods of the contents

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Research Design

What makes financial education successful?

15	1,000,000
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7	4,000
6	2,000
5	1,000
4	500
3	300
2	200
1	100

Quale dei seguenti "tagli" di banconote in Euro NON esiste?

A	25 Euro	B	50 Euro
C	100 Euro	D	200 Euro

Delivery methods of the contents

1 2 3 4

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Research Design

What makes financial education successful?

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5	1,000
4	500
3	300
2	200
1	100

Qual è il colore prevalente nelle banconote da 200€?

A	Blu	B	Verde
C	Arancione	D	Giallo

Delivery methods of the contents

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Research Design

What makes financial education successful?

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3	300
2	200
1	100

Sei appena atterrato in Italia da un volo proveniente dagli Stati Uniti. Girando per i negozi dell'aeroporto decidi di comprare qualcosa che puoi pagare sia in Euro sia in Dollari americani. Se hai ancora dei dollari nel portafogli ed hai visto che le quotazioni dell'Euro al banco cambiavalute erano "BID=1,10" e "ASK=1,40", sapresti dire in che modo ti conviene pagare il tuo acquisto se puoi pagarlo con 100€ o con $120?

A Conviene pagare in Euro	**B** Conviene pagare in Dollari
C Dato che le due quotazioni sono in media 1,20 è indifferente pagare in Euro o in Dollari	**D** Dalle informazioni disponibile non si può dire con certezza cosa convenga fare.

Delivery methods
of the contents

1 **2** **3** **4**

1 **Face-to-face class**

2 **Live-streaming class**

3 **Online Videos**

4 **Edutainment**

Research Design

What makes financial education successful?

Some infos

- More than 50 questions
- New questions each game *(random selection, reshuffling of options' list)*
- Brief explanation after each answer

Delivery methods of the contents

1 2 3 4

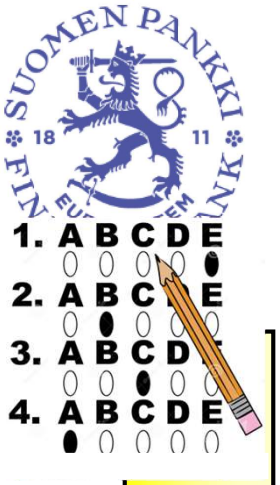
1 Face-to-face class

2 Live-streaming class

3 Online Videos

4 Edutainment

Research Design



Pre-Test

Playing a game

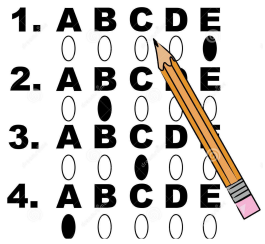
Class (face to face)

Class (live streaming from remote)

Web course by videos (pre-recorded)

Playing a game (learning by doing)

(Control group)



Post-Test

Palying a game

Research questions

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

2 What is the difference in the learning outcome (FL) between different delivery options?
(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, etc.)

3 How much is the effect of FE on people confidence?

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE ?

Research questions

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

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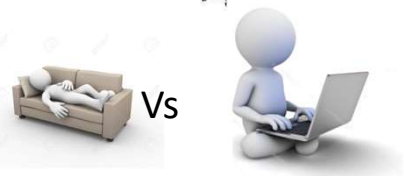
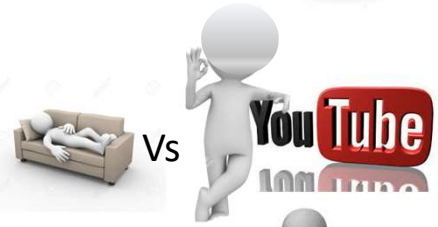
4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE ?

Data

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)





The Assessment of Financial Literacy

Financial Literacy as the
sum of correct answers
to **five** multiple choice questions

Data

Delivery methods

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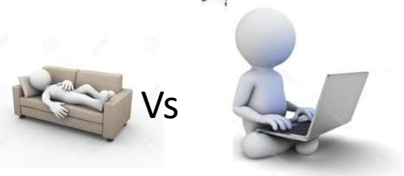

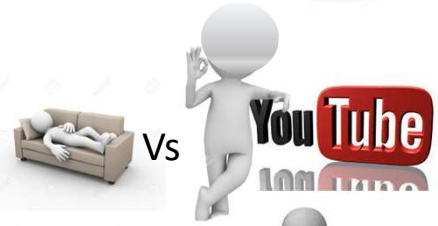

1) Which background colour is the 20€ bill?

- O Grey
- O Pink/Red
- O Blue
- O Orange
- O *(Do not know)*

2) Who is the issuer of Euros (banknotes and coins)?

- O Minister of Economics and Finance
- O European Central Bank (ECB)
- O Parliament
- O Government
- O *(Do not know)*

3) When did it happen the switch from the Italian Lira and the Euro?

- O Around 5 years ago
- O Around 10 years ago
- O More than 15 years ago
- O Less than 5 years ago
- O *(Do not know)*

4) Which of the following Countries di NOT use Euro as local currency?

- O France
- O Germany
- O Spain
- O USA
- O *(Do not know)*

5) If the Euro-Dollar exchange rate is 1.20, how much dollar you take exchanging 100€?

- O $80
- O $120
- O $83.33
- O $1,200
- O *(Do not know)*

Data

Delivery methods

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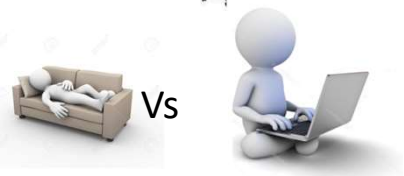

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Correct answer (%)
Pre-test: 97.4%
Post-test 100%

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Correct answer (%)
Pre-test: 90.8%
Post-test 88.0%

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Too easy…

Data

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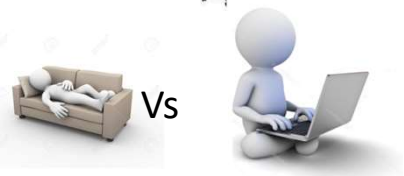

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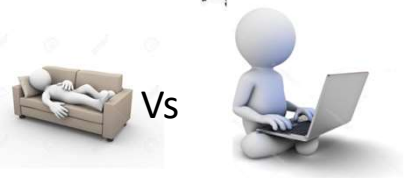
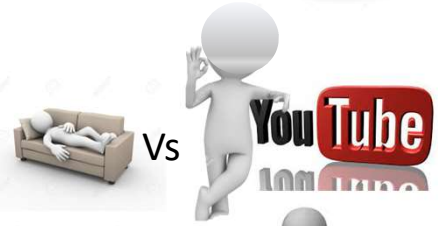




1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

Delivery methods

6) Which is the maximum amount (by law) of cash you can withdraw from an ATM in a month?

- O 10,000 Euro
- O 5,000 Euro
- O 2,500 Euro
- O There is no limit by the law
- O *(Do not know)*

7) You are coming back from the US. Shopping around in the airport you decide to buy an item that you can pay either by Euro or US Dollars. Suppose you still have dollar and you can exchange them at Bid=1.10 and Ask 1.40 in a currency kiosk. Is it more convenient to pay in store with 100€ or US$ 120?

- O It is better to pay in Euro
- O It is better to pay in US Dollar
- O Because the average between Bid and Ask is 1.20, to pay in store in Euro or Dollar is the same
- O There is not enough information to answer for sure
- O *(Do not know)*

8) You have found banknotes that are “trunked” by the 60% (60% of the banknote is missing). If you go to Bank of Italy (central bank) …

- O … you can still replace these bankontes with a new one
- O … you will receive new banknotes equal to the 40% of the original full value
- O … you receive nothing, because the trunkation is beyond the 50% and you receive your banknotes back
- O … your banknotes will be retained by the central bank and you receive nothing back
- O *(Do not know)*

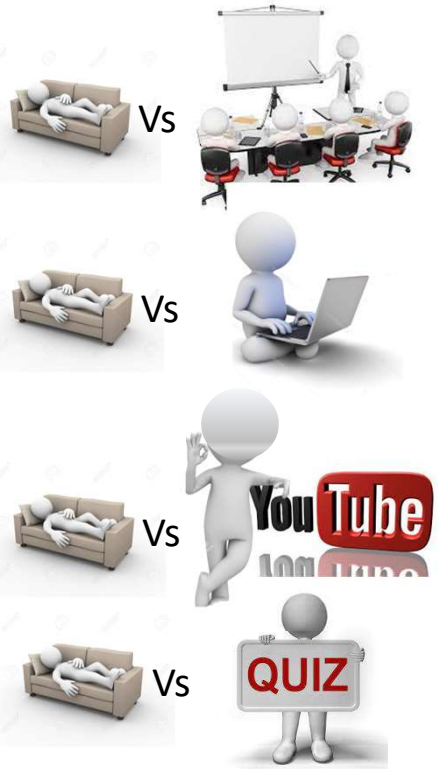
9) If you find a suitcase full of Italian Lira and you go to the Bank of Italy (issuer)…

- O … you realize these banknotes cannot be exchanged for Euro anymore
- O … banknotes wil be exchanged for Euro at the 2001 official exchange rate (1,936.27 Lira for 1 Euro)
- O … you can exchange Lira for Euro only proving the legal provenance of the banknotes
- O … banknotes will be retained and destroyed (without anything in exchange)
- O *(Do not know)*

10) Which the limit by the law for cash payment by coins in Italy?

- O There is no limit, because coins are Euro as banknotes
- O 50 coins (regardless their value)
- O 500 coins (regardless their value)
- O Coins which total value exceeed 500€
- O *(Do not know)*

Data



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(e.g. Can we “teach by edugaming”?)

Delivery methods

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- O 10,000 Euro
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- O 2,500 Euro
- O There is no limi
- O *(Do not know)*

Correct answer (%)
Pre-test: 17.1%
Post-test 62.0%

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- O … banknotes will
  (without anything in exchange)
- O *(Do not know)*

Correct answer (%)
Pre-test: 27.6%
Post-test 70.4%

10) Which the limit by the law for cash payment by coins in Italy?

- O There is no
  banknotes
- O 50 coins (re
- O 500 coins (r
- O Coins which total value exceeed 500€
- O *(Do not know)*

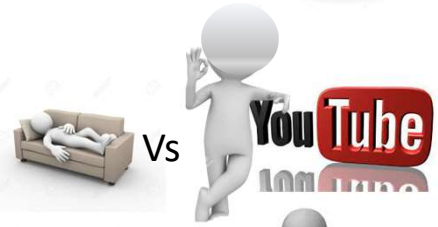
Correct answer (%)
Pre-test: 25.7%
Post-test 72.5%

Data

Delivery methods

1 How much effective is FE?

(e.g. Can we “teach by edugaming”?)



	fl1a	fl2a	fl3a	fl4a	fl5a	fl6a	fl7a	fl8a	fl9a	fl10a
fl1a	1									
fl2a	0.09	1								
fl3a	0.20	0.32	1							
fl4a	0.34	0.16	0.30	1						
fl5a	0.09	0.07	0.14	0.19	1					
fl6a	0.07	-0.10	-0.11	-0.10	-0.05	1				
fl7a	0.10	-0.11	-0.13	0.07	0.14	0.03	1			
fl8a	0.00	-0.07	-0.15	0.07	-0.09	-0.07	-0.03	1		
fl9a	0.04	-0.01	-0.06	0.03	0.04	-0.09	0.11	0.14	1	
fl10a	0.07	-0.05	-0.32	0.05	-0.19	-0.01	-0.03	0.20	-0.01	1

Pre-Test Correlation

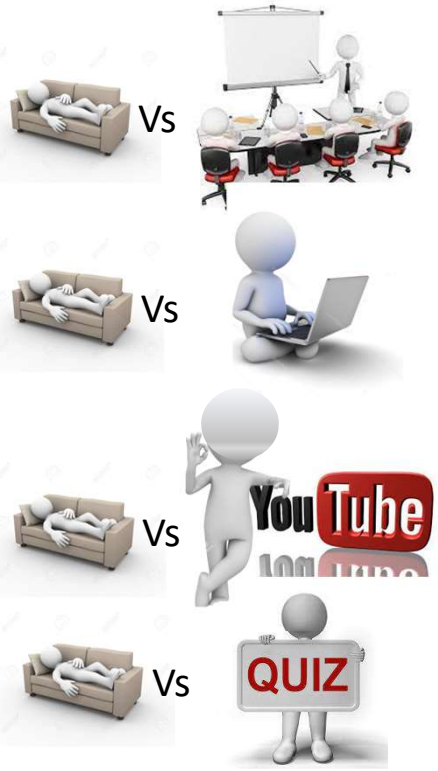
Data

Delivery methods

1 How much effective is FE?

(e.g. Can we “teach by edugaming”?)

	fl1z	fl2z	fl3z	fl4z	fl5z	fl6z	fl7z	fl8z	fl9z	fl10z
fl1z	.									
fl2z	.	1								
fl3z	.	-0.03	1							
fl4z	.	-0.03	-0.01	1						
fl5z	.	0.02	-0.04	0.16	1					
fl6z	.	0.11	-0.07	-0.07	0.22	1				
fl7z	.	-0.05	-0.05	-0.05	0.03	0.29	1			
fl8z	.	0.11	-0.05	-0.05	0.02	0.20	0.22	1		
fl9z	.	-0.06	-0.03	-0.03	0.08	0.13	0.16	0.18	1	
fl10z	.	0.11	-0.05	-0.05	0.02	0.30	0.15	0.19	0.28	1



Post-Test Correlation

Data

Delivery methods

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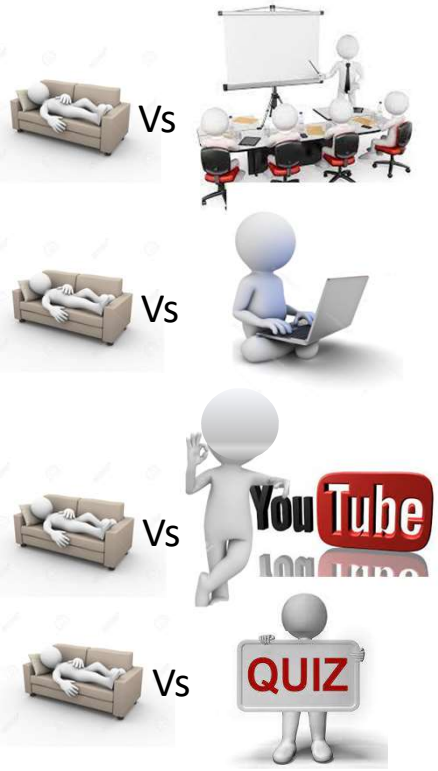


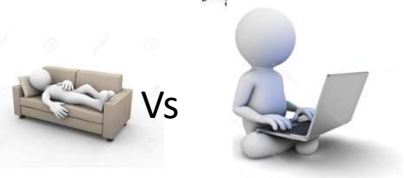
FL score (0-5)

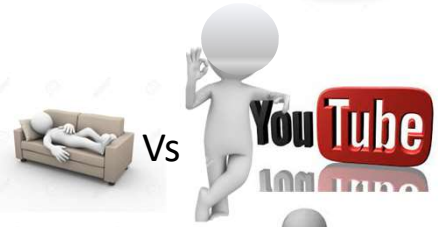
	Pre-test (Average)	Post-test (Average)	diff. (Post-Pre)	T-test post-pre>0 (p-value)
Class	1.773	4.045	**2.273**	0.000***
Streaming	1.207	4.138	**2.931**	0.000***
Video	1.586	4.034	**2.448**	0.000***
Quiz	1.586	4.355	**3.065**	0.000***
(Control)	1.484	1.903	**0.419**	0.000***
ALL	1.493	3.662	**2.211**	0.000***

Data

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)





	Correct answer (%)
Compound Interest	70.4%
Inflation	79.6%
Bond	21.1%
Mortgage	64.8%
Diversification	73.5%

Lusardi-Mitchell (Big 5)

Average number of correct answers 3.16

(All observations)

Data

Delivery methods

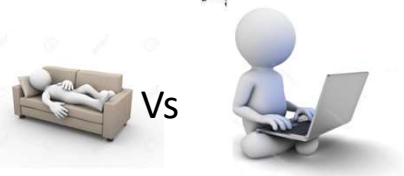
1 How much effective is FE?

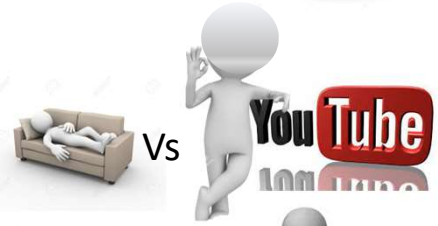
(e.g. Can we “teach by edugaming”?)

Gender (Male=1)

Topgrade(Yes=1)
(at high school)

Parentsgrad (Yes=1)
(at least one)





	Male	Female	Obs
Class	59.1%	40.9%	22
Streaming	55.2%	44.8%	29
Video	48.3%	51.7%	29
Quiz	50.0%	50.0%	32
(Control)	54.8%	45.2%	31
ALL	52.6%	47.4%	156

	Topgrade	Obs
Class	22.7%	22
Streaming	34.5%	29
Video	34.5%	29
Quiz	18.8%	32
(Control)	19.4%	31
ALL	25.9%	143

	Parents Graduated	Obs
Class	31.8%	22
Streaming	44.8%	29
Video	51.7%	29
Quiz	71.0%	32
(Control)	48.4%	31
ALL	51.0%	156

100% Freshman college students

98% Born in 2002-2004

Data

Delivery methods

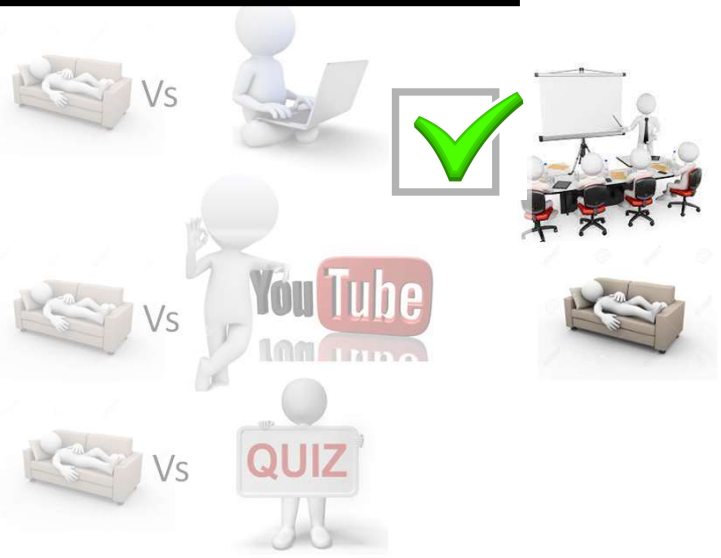
1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

Analysis

Delivery methods

FLscore [0 - 5]

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)



FL Post-test

FL Pre-test

4.045

1.773

1.903

1.484

Diff-in-Diff = **2.142**
(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 106

	Before	After	
Control:	31	31	62
Treated:	22	22	44
	53	53	

Outcome var.	FL5sc~a	S. Err.	|t|	P>|t|
Before				
Control	1.484			
Treated	1.773			
Diff (T-C)	0.289	0.239	1.21	0.231
After				
Control	1.903			
Treated	4.045			
Diff (T-C)	2.142	0.239	8.95	0.000***
Diff-in-Diff	1.853	0.339	5.47	0.000***

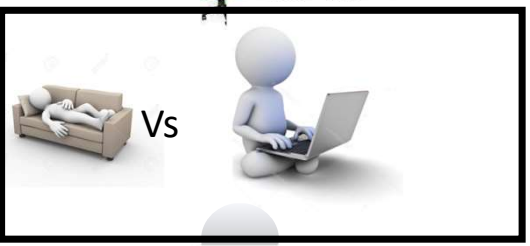
R-square: 0.56
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

FLscore [0 - 5]

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)



FL Post-test

FL Pre-test

4.138

1.903

1.484

1.207

Diff-in-Diff = **2.512**
(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 120

	Before	After	
Control:	31	31	62
Treated:	29	29	58
	60	60	

Outcome var.	FL5sc~a	S. Err.	|t|	P>|t|
Before				
Control	1.484			
Treated	1.207			
Diff (T-C)	-0.277	0.226	-1.23	0.223
After				
Control	1.903			
Treated	4.138			
Diff (T-C)	2.235	0.226	9.89	0.000***
Diff-in-Diff	2.512	0.319	7.86	0.000***

R-square: 0.64

* Means and Standard Errors are estimated by linear regression

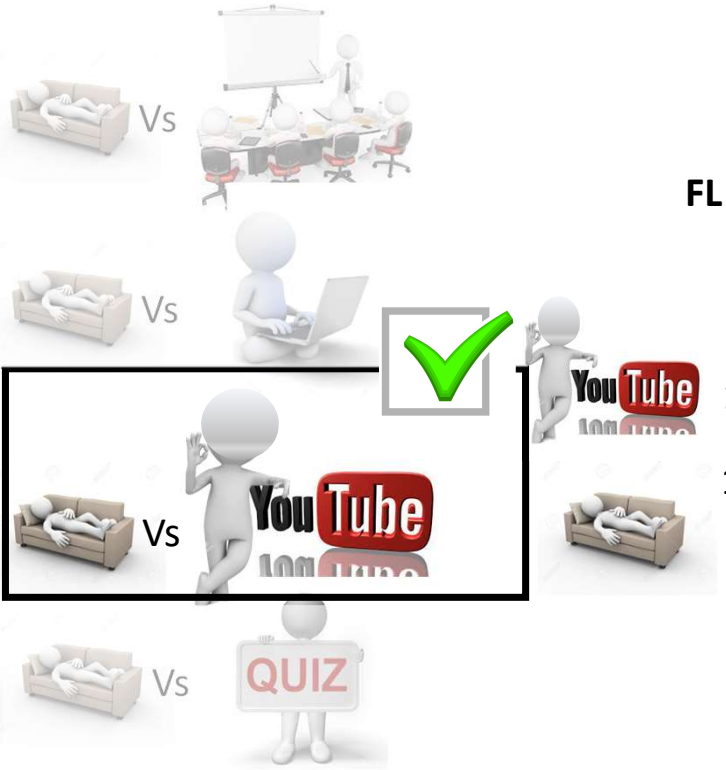
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

FLscore [0 - 5]



FL Post-test

FL Pre-test

4.034

1.586

1.903

1.484

Diff-in-Diff = **2.029**
(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 120

	Before	After	
Control:	31	31	62
Treated:	29	29	58
	60	60	

Outcome var.	FL5sc~a	S. Err.	|t|	P>|t|
Before				
Control	1.484			
Treated	1.586			
Diff (T-C)	0.102	0.218	0.47	0.639
After				
Control	1.903			
Treated	4.034			
Diff (T-C)	2.131	0.218	9.79	0.000***
Diff-in-Diff	2.029	0.308	6.59	0.000***

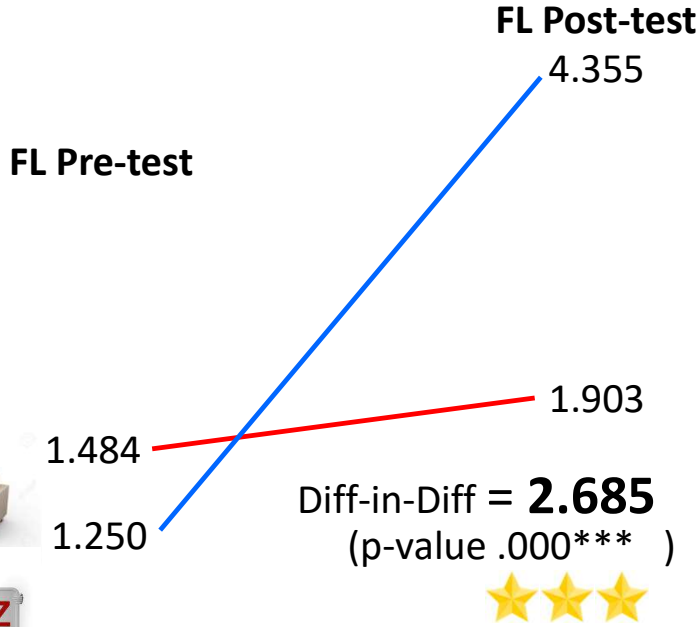
R-square: 0.61
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

FLscore [0 - 5]

Delivery methods



DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 125

	Before	After	
Control:	31	31	62
Treated:	32	31	63
	63	62	

Outcome var.	FL5sc~a	S. Err.	|t|	P>|t|
Before				
Control	1.484			
Treated	1.250			
Diff (T-C)	-0.234	0.244	-0.96	0.340
After				
Control	1.903			
Treated	4.355			
Diff (T-C)	2.452	0.246	9.96	0.000***
Diff-in-Diff	2.685	0.347	7.75	0.000***

R-square: 0.63

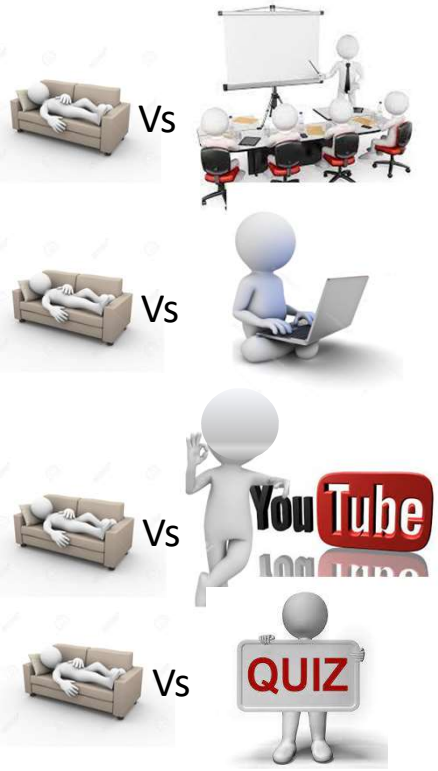
* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Results

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)



Diff-in-Diff = **2.142**
(p-value .000***)

Diff-in-Diff = **2.512**
(p-value .000***)

Diff-in-Diff = **2.029**
(p-value .000***)

Diff-in-Diff = **2.685**
(p-value .000***)

1 **Financial Education works**

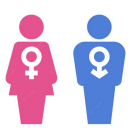
2 **… with every delivery method**

Results

Delivery methods

1 How much effective is FE?

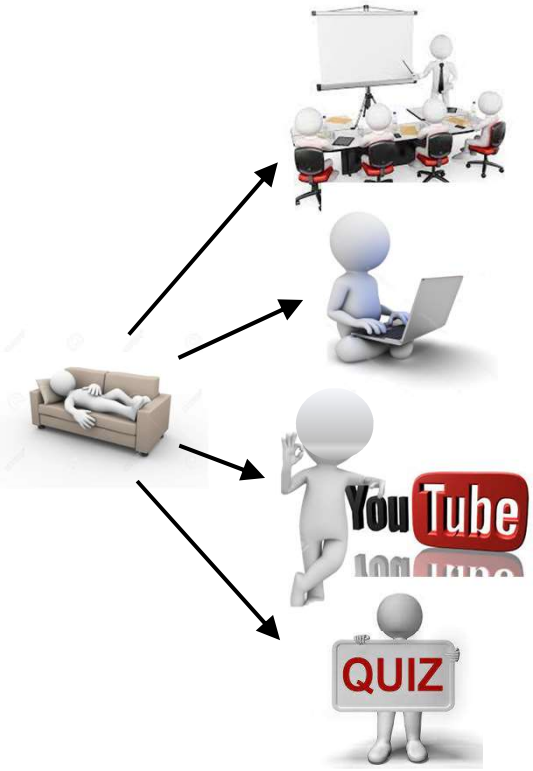
(e.g. Can we “teach by edugaming”?)



Gender (Male=1)

Topgrade(Yes=1)
(at high school)

Parentsgrad (Yes=1)
(at least one)



FL_delta	Coeff.	Std.Err.	P-value	Coeff.	Std.Err.	P-value
Class	**1.626**	0.285	**0.000*** **	**1.576**	0.284	**0.000*** **
Streaming	**2.097**	0.264	**0.000*** **	**2.110**	0.264	**0.000*** **
Video	**1.753**	0.264	**0.000*** **	**1.798**	0.264	**0.000*** **
Quiz	**2.322**	0.260	**0.000*** **	**2.389**	0.260	**0.000*** **
control	*(control group)*			*(control group)*		
Gender				0.183	0.177	0.303
Topgrade				-0.157	-0.203	0.438
Parentsgrads				-0.287	0.175	0.105
constant	0.419		0.024**	0.488	0.233	0.038**
Obs.	142			142		
R-squared (Adj.)	0.4173			0.4104		

Research questions

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

2 What is the difference in the learning outcome (FL) between different delivery options?
(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

3 How much is the effect of FE on people confidence?

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE ?

Research questions

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

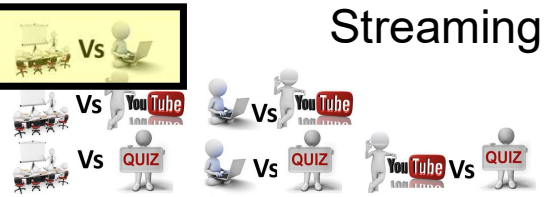
Analysis

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

FLscore [0 - 5]



FL Pre-test

FL Post-test

1.773

4.138

4.045

1.207

Diff-in-Diff = **-0.658**

(p-value .077*)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 102

	Before	After	
Control:	29	29	58
Treated:	22	22	44
	51	51	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.207			
Treated	1.773			
Diff (T-C)	0.566	0.260	2.17	0.032**
After				
Control	4.138			
Treated	4.045			
Diff (T-C)	-0.092	0.260	0.36	0.723
Diff-in-Diff	-0.658	0.368	1.79	0.077*

R-square: 0.69

Means and Standard Errors are estimated by linear regression

*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

2

What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

FLscore [0 - 5]

FL Pre-test

FL Post-test

1.773

1.586

4.045

4.034

Diff-in-Diff = -0.176

(p-value .621)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 102

	Before	After	
Control:	29	29	58
Treated:	22	22	44
	51	51	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.586			
Treated	1.773			
Diff (T-C)	0.187	0.250	0.75	0.458
After				
Control	4.034			
Treated	4.045			
Diff (T-C)	0.011	0.250	0.04	0.965
Diff-in-Diff	-0.176	0.354	0.50	0.621

R-square: 0.65

* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

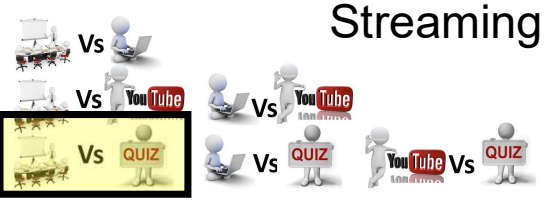
Analysis

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

FLscore [0 - 5]



FL Pre-test

1.773

1.250

FL Post-test

4.355

4.045

Diff-in-Diff = **-0.832**

(p-value .041**)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 107

	Before	After	
Control:	32	31	63
Treated:	22	22	44
	54	53	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.250			
Treated	1.773			
Diff (T-C)	0.523	0.283	1.84	0.068*
After				
Control	4.355			
Treated	4.045			
Diff (T-C)	-0.309	0.285	1.08	0.281
Diff-in-Diff	-0.832	0.402	2.07	0.041**

R-square: 0.66

Means and Standard Errors are estimated by linear regression

*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

FLscore [0 - 5]

FL Pre-test

FL Post-test

4.138

4.034

Diff-in-Diff = 0.483

(p-value .150)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 116

	Before	After	
Control:	29	29	58
Treated:	29	29	58
	58	58	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.586			
Treated	1.207			
Diff (T-C)	-0.379	0.236	-1.61	0.110
After				
Control	4.034			
Treated	4.138			
Diff (T-C)	0.103	0.236	0.44	0.662
Diff-in-Diff	0.483	0.333	1.45	0.150

R-square: 0.70

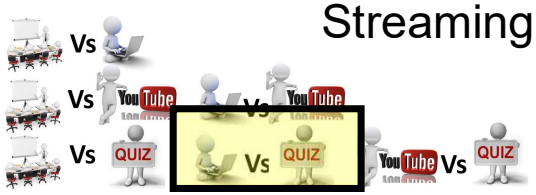
* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

2 What is the difference in the learning outcome (FL) between different delivery options?

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)



FL Pre-test

1.250
1.207

FL Post-test

4.355
4.138

Diff-in-Diff = -0.174
(p-value .640)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 121

	Before	After	
Control:	32	31	63
Treated:	29	29	58
	61	60	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.250			
Treated	1.207			
Diff (T-C)	-0.043	0.261	-0.17	0.869
After				
Control	4.355			
Treated	4.138			
Diff (T-C)	-0.217	0.263	0.82	0.411
Diff-in-Diff	-0.174	0.371	0.47	0.640

R-square: 0.70
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1

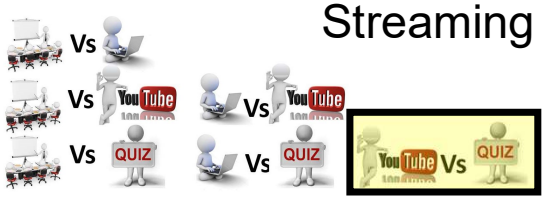
Analysis

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

FLscore [0 - 5]

(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)



FL Pre-test

FL Post-test

4.138

4.034

Diff-in-Diff = **-0.657**

(p-value .072*)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 121

	Before	After	
Control:	32	31	63
Treated:	29	29	58
	61	60	

Outcome var.	flsco~5	S. Err.	|t|	P>|t|
Before				
Control	1.250			
Treated	1.586			
Diff (T-C)	0.336	0.254	1.32	0.189
After				
Control	4.355			
Treated	4.034			
Diff (T-C)	-0.320	0.256	1.25	0.214
Diff-in-Diff	-0.657	0.361	1.82	0.072*

R-square: 0.67

Means and Standard Errors are estimated by linear regression

*Inference: *** p<0.01; ** p<0.05; * p<0.1

Results

Delivery methods

2 What is the difference in the learning outcome (FL) between different delivery options?

Diff-in-Diff = **-0.658** (p-value .077*)

Diff-in-Diff = -0.176 (p-value .621)

Diff-in-Diff = **-0.832** (p-value .041**)

Diff-in-Diff = 0.483 (p-value .150)

Diff-in-Diff = -0.174 (p-value .640)

Diff-in-Diff = **-0.657** (p-value .072*)

1

2

No big differences between different methods

Edutainment (quiz) works well

Research questions

Delivery methods

1. How much effective is FE?
   (e.g. Can we “teach by edugaming”?)

2. What is the difference in the learning outcome (FL) between different delivery options?
   (Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

3. How much is the effect of FE on people confidence?

4. What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE ?

Research questions

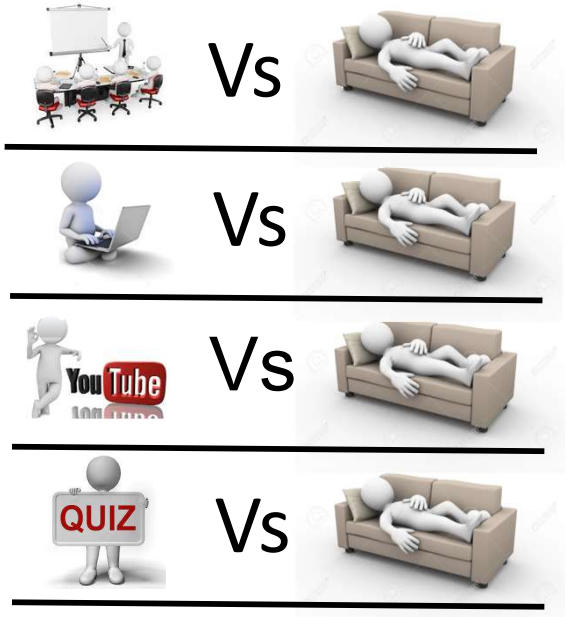
Delivery methods

3 How much is the effect of FE on people confidence?

Pre-test Time

How much confident are you that your answer is the right one?

Low ○○○○○ High



Post-test Time

How much confident are you that your answer is the right one?

Low ○○○○○ High

Confidence T_0 Vs Confidence T_1

Research questions

Delivery methods

3

How much is the effect of FE on people confidence?

1	2	3	4	5
I guess	Not very confident	Confident	Very confident	Sure

Financial Confidence score [1 - 5]

	Pre-test (Average)	Post-test (Average)	diff. (Post-Pre)	T-test post-pre>0 (p-value)
Class	4.263	4.837	**0.574**	0.007**
Streaming	4.245	4.567	**0.322**	0.011**
Video	4.097	4.661	**0.564**	0.000***
Quiz	4.429	4.640	**0.211**	0.026**
(Control)	4.047	4.481	**0.435**	0.017**
ALL	4.230	4.670	**0.440**	0.000***

(137 ← Total Obs. → 89)

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?

FC Pre-test

FC Post-test

4.837

4.263

4.481

4.047

Diff-in-Diff = 0.139
(p-value .658)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 59

	Before	After	
Control:	27	7	34
Treated:	19	6	25
	46	13	

Outcome var.	q8a	S. Err.	|t|	P>|t|
Before				
Control	4.047			
Treated	4.263			
Diff (T-C)	0.216	0.148	1.46	0.151
After				
Control	4.481			
Treated	4.837			
Diff (T-C)	0.355	0.275	1.29	0.202
Diff-in-Diff	0.139	0.313	0.45	0.658

R-square: 0.21

* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?

FC Post-test

FC Pre-test

4.567

4.481

4.245

4.047

Diff-in-Diff = -0.112
(p-value .637)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 86

	Before	After	
Control:	27	7	34
Treated:	28	24	52
	55	31	

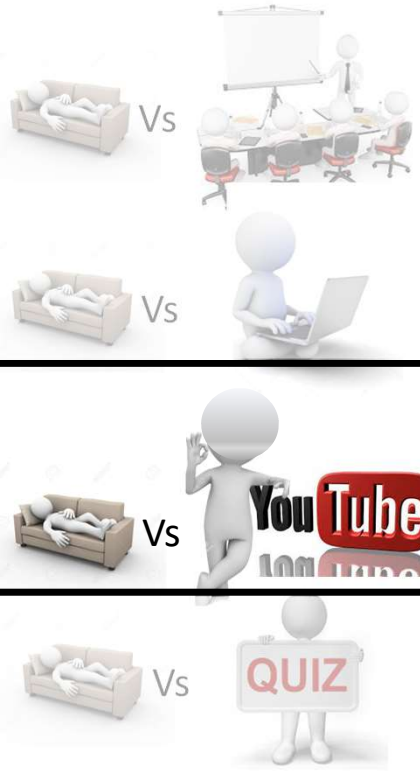
Outcome var.	q8a	S. Err.	|t|	P>|t|
Before				
Control	4.047			
Treated	4.245			
Diff (T-C)	0.198	0.126	1.58	0.119
After				
Control	4.481			
Treated	4.567			
Diff (T-C)	0.086	0.200	0.43	0.668
Diff-in-Diff	-0.112	0.236	0.47	0.637

R-square: 0.17
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?



FC Pre-test

FC Post-test

4.097

4.047

4.661

4.481

Diff-in-Diff = 0.129

(p-value .591)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 80

	Before	After	
Control:	27	7	34
Treated:	25	21	46
	52	28	

Outcome var.	q8a	S. Err.	|t|	P>|t|
Before				
Control	4.047			
Treated	4.097			
Diff (T-C)	0.051	0.129	0.39	0.696
After				
Control	4.481			
Treated	4.661			
Diff (T-C)	0.180	0.202	0.89	0.376
Diff-in-Diff	0.129	0.240	0.54	0.591

R-square: 0.26

* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?

FC Pre-test

4.429 — 4.640

4.047 — 4.481

Diff-in-Diff = -0.223
(p-value .345)

FC Post-test

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 93

	Before	After	
Control:	27	7	34
Treated:	30	29	59
	57	36	

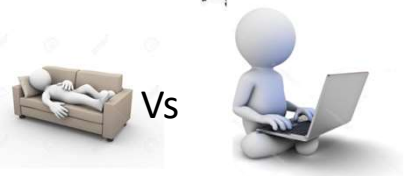
Outcome var.	q8a	S. Err.	|t|	P>|t|
Before				
Control	4.047			
Treated	4.429			
Diff (T-C)	0.382	0.125	3.05	0.003***
After				
Control	4.481			
Treated	4.640			
Diff (T-C)	0.159	0.199	0.80	0.426
Diff-in-Diff	-0.223	0.235	0.95	0.345

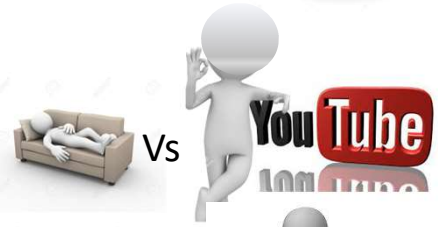
R-square: 0.20
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Research questions

Delivery methods

3 How much is the effect of FE on people confidence?





Diff-in-Diff = 0.139 (p-value .658)

Diff-in-Diff = -0.112 (p-value .637)

Diff-in-Diff = 0.129 (p-value .591)

Diff-in-Diff = -0.223 (p-value .345)

1 **No real effect of FE on FC**

Research questions

Delivery methods

1 How much effective is FE?
(e.g. Can we “teach by edugaming”?)

2 What is the difference in the learning outcome (FL) between different delivery options?
(Class Vs Streaming, Class Vs Video, Class Vs Quiz , Streaming Vs Video, Streaming Vs Quiz, Video Vs Quiz)

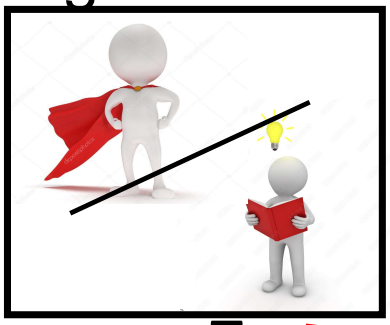
3 How much is the effect of FE on people confidence?

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE ?

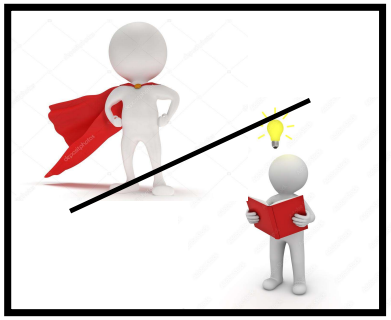
Research questions

Delivery methods

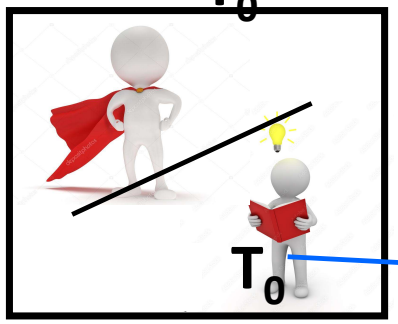
4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



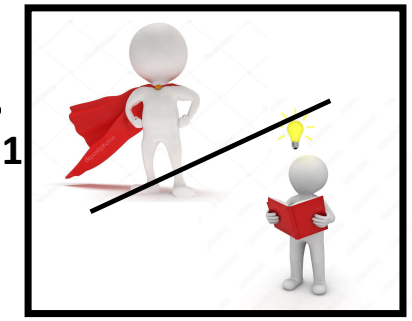
T_0



T_1



T_0



T_1

Research questions

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

Financial Confidence*
(What you think you are)

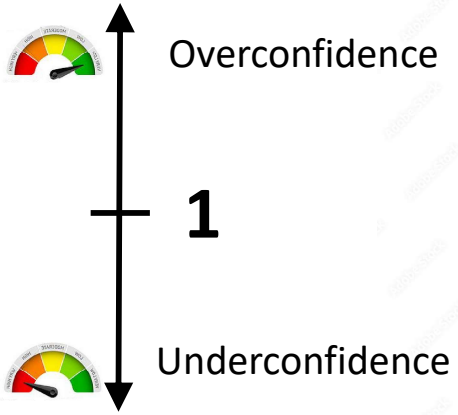
How much confident are you that your answer is the right one?

Low ○○○○○ High

Confidence

Literacy

Financial Literacy
(What you really are)



**Confidence was rescaled from 1-to-5 to 0-to-5 to make it matches with the FL scale (0-to-5)*

Research questions

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

Financial Confidence*
(What you think you are)

How much confident are you that your answer is the right one?

Low ○○○○○ High

Confidence
Literacy
Overconfidence

Perception **Reality**

Vs

Overconfidence

1

Underconfidence

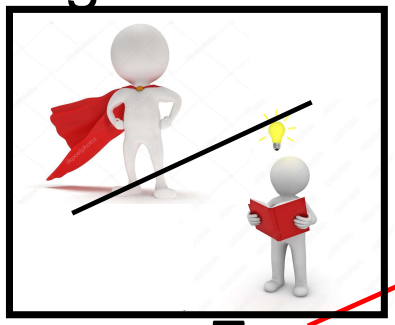
Financial Literacy
(What you really are)

**Confidence was rescaled from 1-to-5 to 0-to-5 to make it matches with the FL scale (0-to-5)*

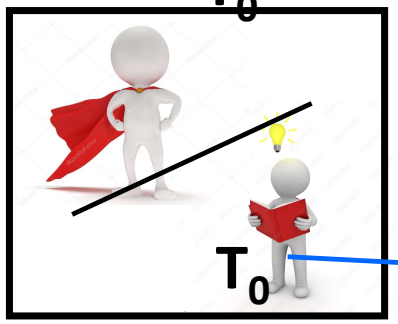
Research questions

Delivery methods

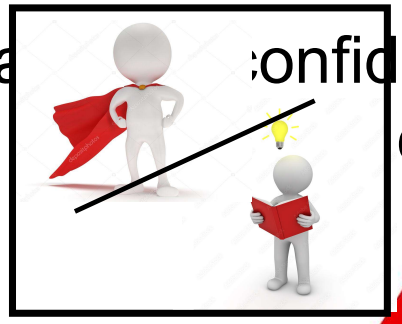
4 What is the relationship between the cha onfidence and the change in FL? Is there a risk to feed ce with FE?



T_0

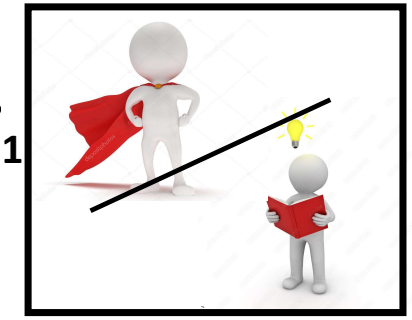


T_0



T_1

Overconfidence?

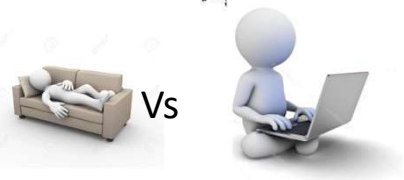


T_1

Research questions

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



Analysis

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

FC/FL Pre-test **FC/FL Post-test**

2.341 2.352

2.290 0.796

Diff-in-Diff = **-1.608**

(p-value .032**)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 59

	Before	After	
Control:	27	7	34
Treated:	19	6	25
	46	13	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.290			
Treated	2.341			
Diff (T-C)	0.052	0.345	0.15	0.882
After				
Control	2.352			
Treated	0.796			
Diff (T-C)	-1.556	0.641	2.43	0.019**
Diff-in-Diff	-1.608	0.728	2.21	0.032**

R-square: 0.15

* Means and Standard Errors are estimated by linear regression

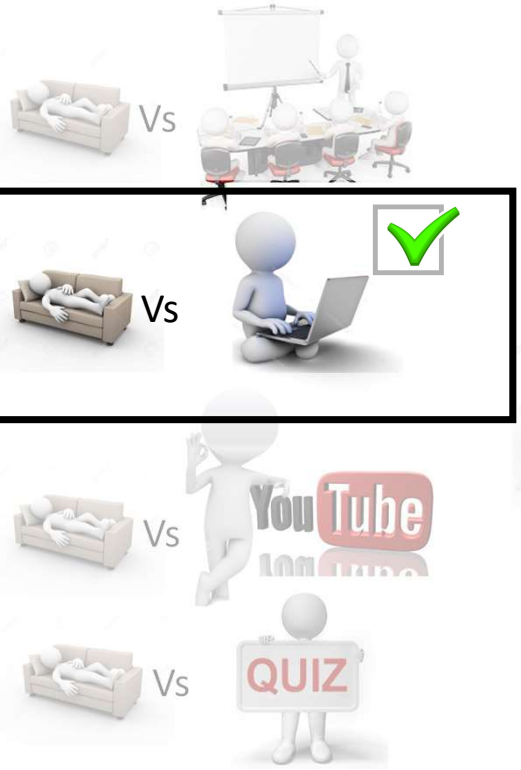
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



FC/FL Pre-test **FC/FL Post-test**

2.842 → 0.418

2.290 → 2.352

Diff-in-Diff = **-2.486**

(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 86

	Before	After	
Control:	27	7	34
Treated:	28	24	52
	55	31	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.290			
Treated	2.842			
Diff (T-C)	0.552	0.272	2.03	0.046**
After				
Control	2.352			
Treated	0.418			
Diff (T-C)	-1.934	0.434	4.46	0.000***
Diff-in-Diff	-2.486	0.512	4.85	0.000***

R-square: 0.50

Means and Standard Errors are estimated by linear regression

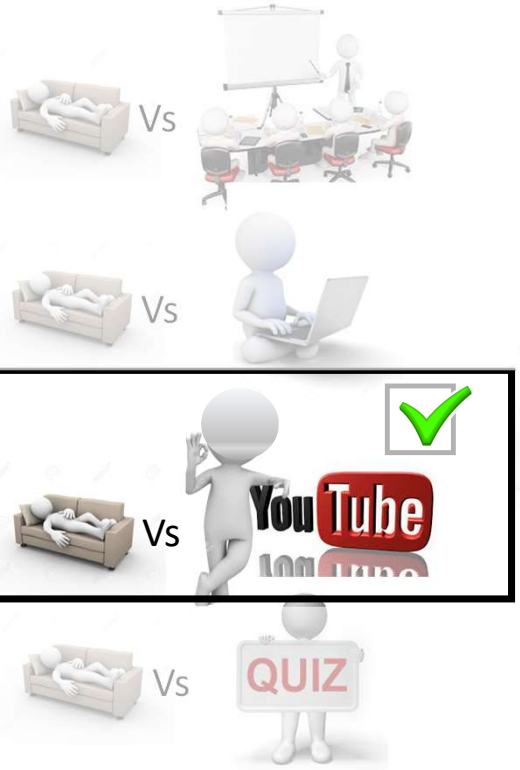
*Inference: *** p<0.01; ** p<0.05; * p<0.1

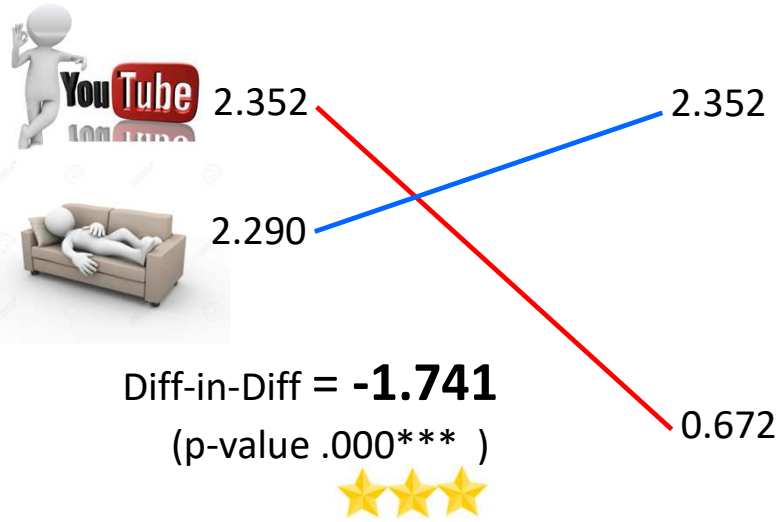
Analysis

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

FC/FL Pre-test **FC/FL Post-test**





Diff-in-Diff = **-1.741**

(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 80

	Before	After	
Control:	27	7	34
Treated:	25	21	46
	52	28	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.290			
Treated	2.352			
Diff (T-C)	0.062	0.267	0.23	0.818
After				
Control	2.352			
Treated	0.672			
Diff (T-C)	-1.680	0.419	4.00	0.000***
Diff-in-Diff	-1.741	0.497	3.50	0.001***

R-square: 0.38

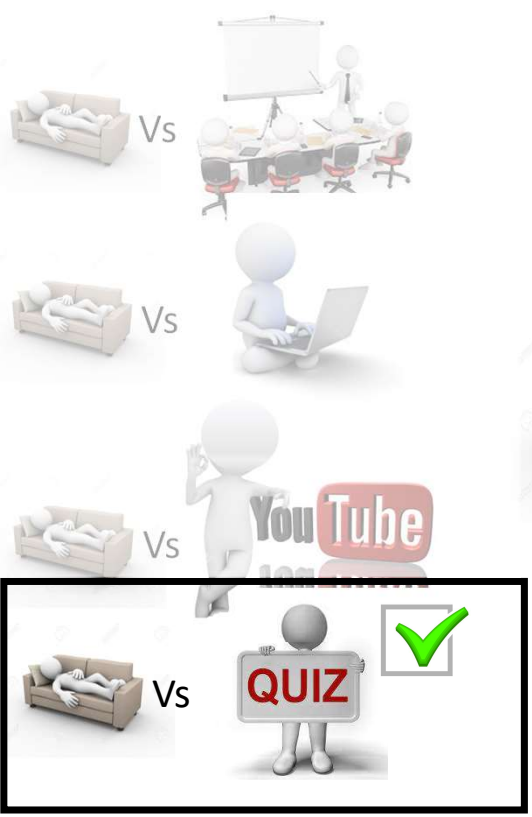
Means and Standard Errors are estimated by linear regression

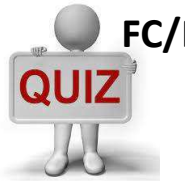
*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?





FC/FL Pre-test **FC/FL Post-test**

3.020

2.352

2.290

-0.037

Diff-in-Diff = **-3.119**

(p-value .000**)

```
. *Treatment is Quiz=g4 (…control Control=g0)

. diff overconf5, t( g4) p( posttest)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 92
                Before          After
   Control:     27              7               34
   Treated:     30              28              58
                57              35
------------------------------------------------------------------------------
 Outcome var.   | overc~5   | S. Err.   |   |t|   |  P>|t|
------------------------------------------------------------------------------
Before
   Control      |  2.290
   Treated      |  3.020
   Diff (T-C)   |  0.730    | 0.249     | 2.93      | 0.004***
After
   Control      |  2.352
   Treated      | -0.037
   Diff (T-C)   | -2.389    | 0.397     | 6.02      | 0.000***
------------------------------------------------------------------------------
Diff-in-Diff    | -3.119    | 0.469     | 6.66      | 0.000***
------------------------------------------------------------------------------
R-square:    0.66
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1
```

Results

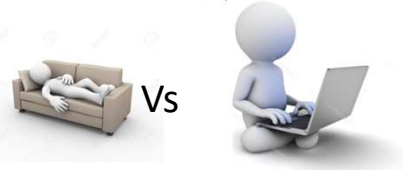
Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

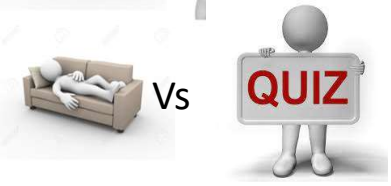
(Reduction of overconfidence)

Diff-in-Diff = **-1.608**
(p-value .032**)



Diff-in-Diff = **-2.486**
(p-value .000***)

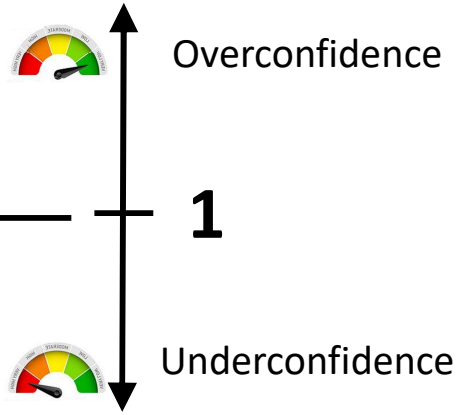
Diff-in-Diff = **-1.741**
(p-value .000***)



Diff-in-Diff = **-3.119**
(p-value .000***)

1 **FE reduces overconfidence**

2 **… with every delivery method**



Research questions

Delivery methods

4

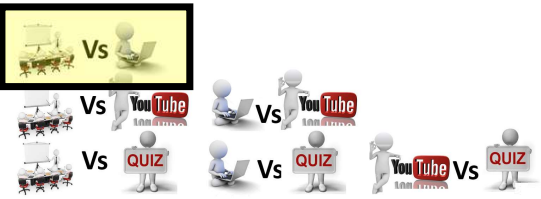
What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



Diff-in-Diff = 0.878

(p-value .167)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 77

	Before	After	
Control:	28	24	52
Treated:	19	6	25
	47	30	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.842			
Treated	2.341			
Diff (T-C)	-0.500	0.343	-1.46	0.149
After				
Control	0.418			
Treated	0.796			
Diff (T-C)	0.378	0.527	0.72	0.475
Diff-in-Diff	0.878	0.629	1.40	0.167

R-square: 0.47

* Means and Standard Errors are estimated by linear regression

*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

FC/FL Pre-test **FC/FL Post-test**

2.352
2.341

0.796
0.672

Diff-in-Diff = 0.134

(p-value .830)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 71

	Before	After	
Control:	25	21	46
Treated:	19	6	25
	44	27	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.352			
Treated	2.341			
Diff (T-C)	-0.010	0.341	-0.03	0.977
After				
Control	0.672			
Treated	0.796			
Diff (T-C)	0.124	0.518	0.24	0.812
Diff-in-Diff	0.134	0.620	0.22	0.830

R-square: 0.35

* Means and Standard Errors are estimated by linear regression

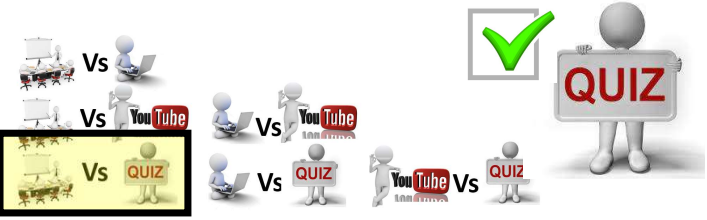
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



FC/FL Pre-test

3.020

2.341

FC/FL Post-test

0.796

-0.037

Diff-in-Diff = **1.511**

(p-value .011**)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 83

	Before	After	
Control:	30	28	58
Treated:	19	6	25
	49	34	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	3.020			
Treated	2.341			
Diff (T-C)	-0.678	0.315	-2.15	0.035**
After				
Control	-0.037			
Treated	0.796			
Diff (T-C)	0.833	0.484	1.72	0.089*
Diff-in-Diff	1.511	0.578	2.62	0.011**

R-square: 0.62

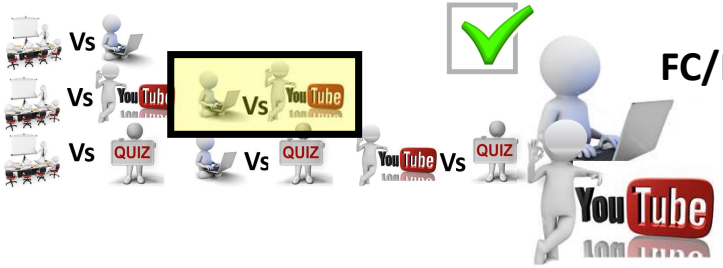
* Means and Standard Errors are estimated by linear regression

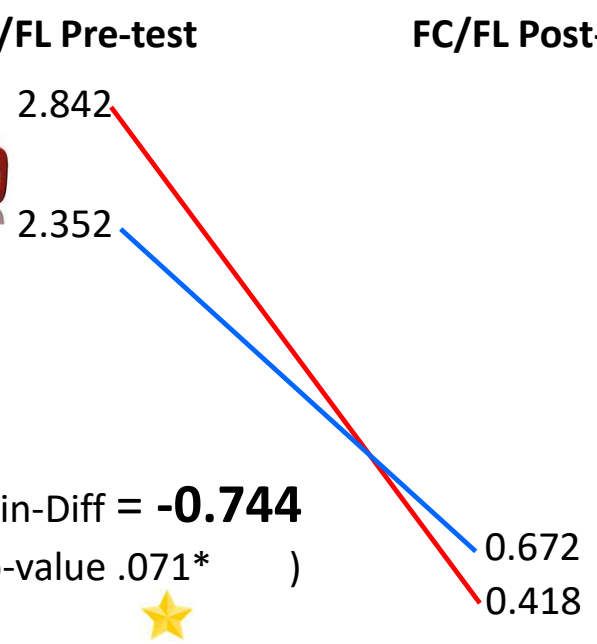
**Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4 What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?





DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 98

	Before	After	
Control:	25	21	46
Treated:	28	24	52
	53	45	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	2.352			
Treated	2.842			
Diff (T-C)	0.490	0.276	1.78	0.079*
After				
Control	0.672			
Treated	0.418			
Diff (T-C)	-0.254	0.300	0.85	0.398
Diff-in-Diff	-0.744	0.407	1.83	0.071*

R-square: 0.53

Means and Standard Errors are estimated by linear regression

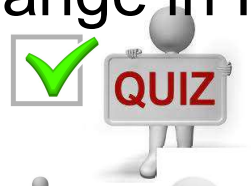
*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



FC/FL Pre-test

3.020

2.842

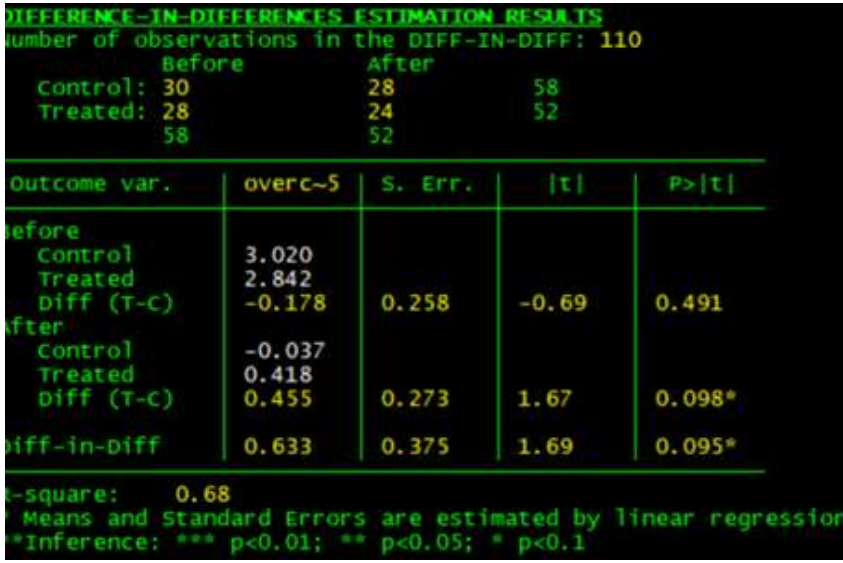
FC/FL Post-test

0.418

-0.037

Diff-in-Diff = **0.633**

(p-value .095*)



DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 110

	Before	After	
Control:	30	28	58
Treated:	28	24	52
	58	52	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	3.020			
Treated	2.842			
Diff (T-C)	-0.178	0.258	-0.69	0.491
After				
Control	-0.037			
Treated	0.418			
Diff (T-C)	0.455	0.273	1.67	0.098*
Diff-in-Diff	0.633	0.375	1.69	0.095*

R-square: 0.68

Means and Standard Errors are estimated by linear regression

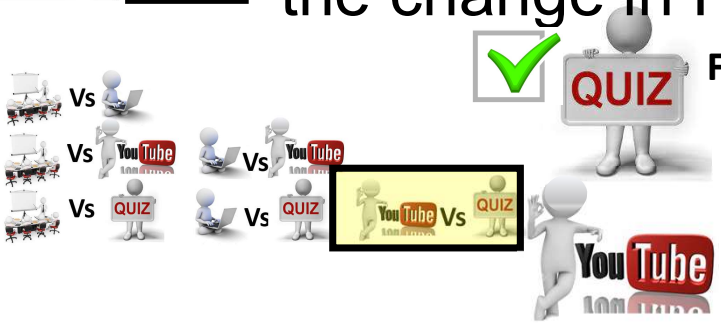
*Inference: *** p<0.01; ** p<0.05; * p<0.1

Analysis

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



FC/FL Pre-test

3.020

2.352

FC/FL Post-test

0.672

-0.037

Diff-in-Diff = **1.377**

(p-value .000***)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: 104

	Before	After	
Control:	30	28	58
Treated:	25	21	46
	55	49	

Outcome var.	overc~5	S. Err.	|t|	P>|t|
Before				
Control	3.020			
Treated	2.352			
Diff (T-C)	-0.668	0.255	-2.62	0.010**
After				
Control	-0.037			
Treated	0.672			
Diff (T-C)	0.709	0.272	2.61	0.010**
Diff-in-Diff	1.377	0.372	3.70	0.000***

R-square: 0.65

* Means and Standard Errors are estimated by linear regression

**Inference: *** p<0.01; ** p<0.05; * p<0.1

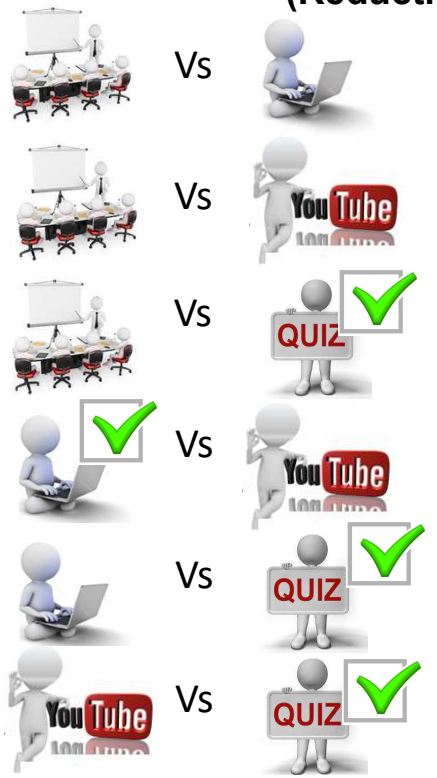
Results

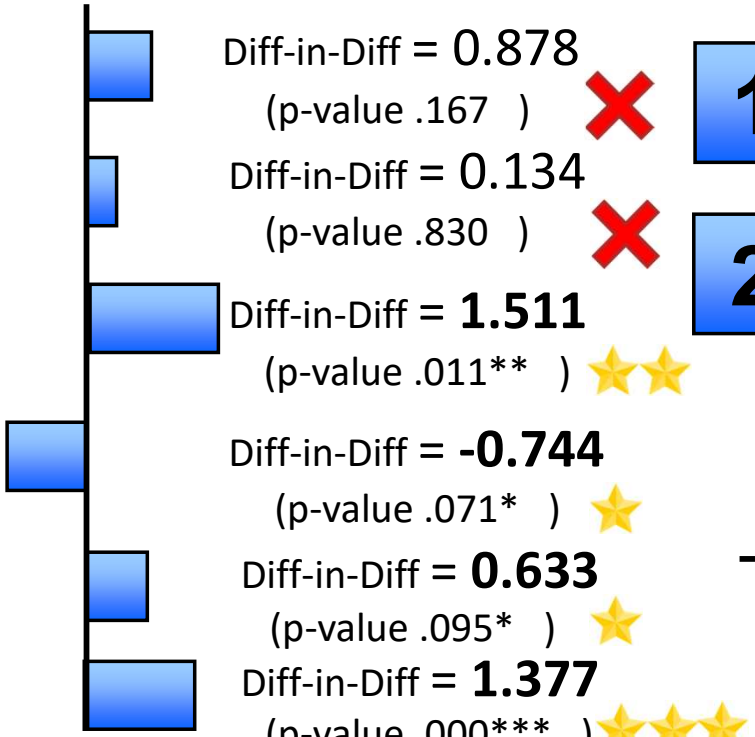
Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?

(Reduction of overconfidence)





Diff-in-Diff = 0.878
(p-value .167)

Diff-in-Diff = 0.134
(p-value .830)

Diff-in-Diff = **1.511**
(p-value .011**)

Diff-in-Diff = **-0.744**
(p-value .071*)

Diff-in-Diff = **0.633**
(p-value .095*)

Diff-in-Diff = **1.377**
(p-value .000***)

1

2

Some different methods work better than others

Edutainment (quiz) works well

Confidence / Literacy

1

Overconfidence

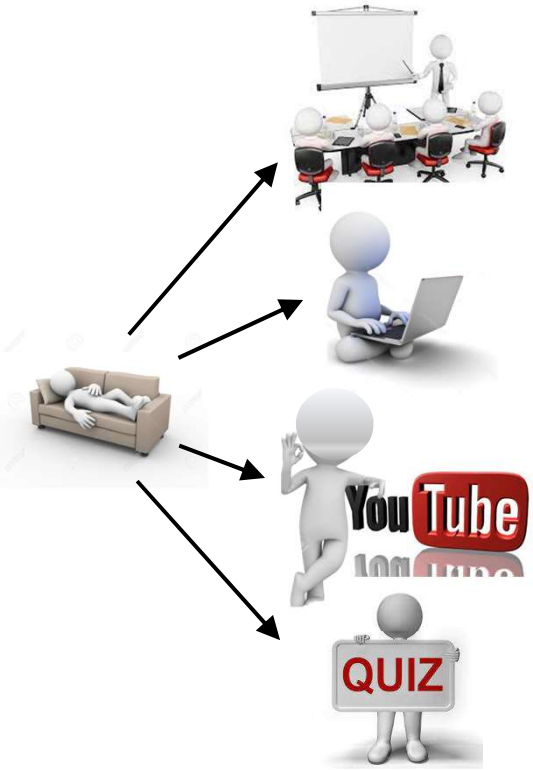
Underconfidence

Results

Delivery methods

4

What is the relationship between the change in confidence and the change in FL? Is there a risk to feed overconfidence with FE?



Gender (Male=1)

Topgrade(Yes=1)
(at high school)

Parentsgrad (Yes=1)
(at least one)

Overconfidence_delta	**Coeff.**	**Std.Err.**	**P-value**	**Coeff.**	**Std.Err.**	**P-value**
Class	**-2.290**	0.665	**0.001*****	**-2.181**	0.691	**0.002****
Streaming	**-2.577**	0.514	**0.000*****	**-2.558**	0.527	**0.000*****
Video	**-1.627**	0.529	**0.003****	**-1.637**	0.543	**0.004****
Quiz	**-3.003**	0.507	**0.000*****	**-3.019**	0.514	**0.000*****
control	*(control group)*			*(control group)*		
Gender				-0.82	0.280	0.769
Topgrade				0.226	0.317	0.479
Parentsgrads				0.284	0.281	0.315
constant	0.030	0.452	0.947	-0.146	0.546	0.790
Obs.	83			83		
R-squared (Adj.)	0.3188			0.3114		

Conclusions

RQ1: How much effective is FE?

1 FE works with every delivery method

RQ2: What is the difference in the learning outcome (FL) between different delivery options?

2 Some differences exist… but they are not big enough to be statistically significant

RQ3: How much is the effect of FE on people confidence?

3 No effects on financial confidence

(But it was already pretty high)

RQ4: What is the relationship between the change in confidence and the change in FL?

(Is there a risk to feed overconfidence with FE?)

4 FE decreases overconfidence (with every delivery method)

Policy implications

1 We can do effective FE even if it is not based on face-to-face meetings
(scalability, accessibility, cost of delivering FE)

2 Edutainment works (pretty well)
(Likelihood to play a game Vs Likelihood to attend onsite events)

3 No effects on financial confidence
(But it was already pretty high)

4 FE decreases overconfidence (with every delivery method)
(FE is not just about FL, but it can work on FC too)

Limitations

1 Small sample size

2 External validity

(Students are not representative of the entire population)

3 Selection bias

(Interest and motivation to learn of students of Economics and Business)

4 Time decay effect of FE

(No evidence of the long term effect of FE)

Bank of Finland

Financial Literacy Conference June 2023

Bank of Finland Museum, Helsinki (Finland)

Monday June 12th, 2023

Delivery Methods in Financial Education

A Comparative Analysis of Face-to-Face Classes, Live Streaming, Videos, and Gaming

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