

# Measuring learning gain: – the why, what and how of measurement



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The aim of this short presentation is to take a peek into the 'hot' topic of Learning Gain (LG)



Big data, learning analytics, assessments, tests, surveys and gradings.

# What is Learning Gain?

Learning Gain could be defined and conceptualised in several ways, but broadly;

“the distance travelled or the improvement in knowledge, skills, work-readiness and personal development demonstrated by students at two points in time”

(McGrath et al, 2015)

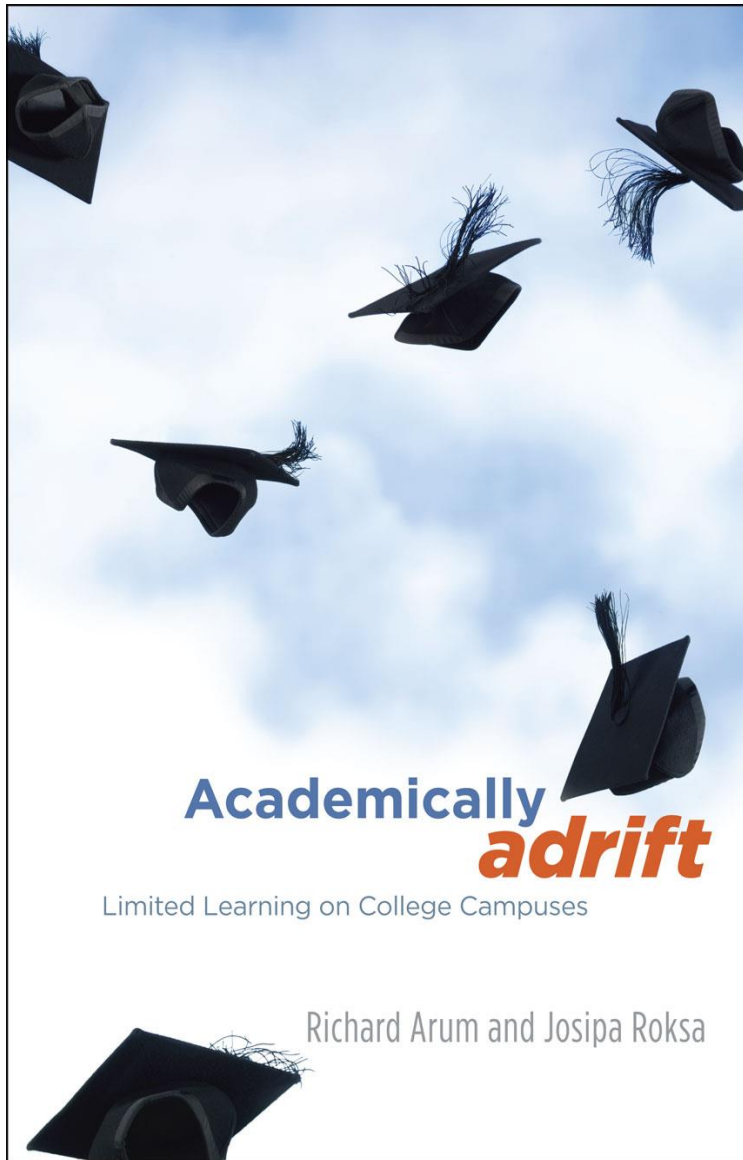
How did we get to this point?

# The context – why is learning gain a ‘hot’ topic?

Arum & Roksa’s (2011) book drew attention to the following:

- Benchmark Study & Key Reference Point
- Identified Gap in acquired Higher Cognitive Skills in HE
- Acknowledge Grades are ineffective of measuring student learning within course/discipline
- But grades ‘provide only a limited and inadequate assessment of student learning’

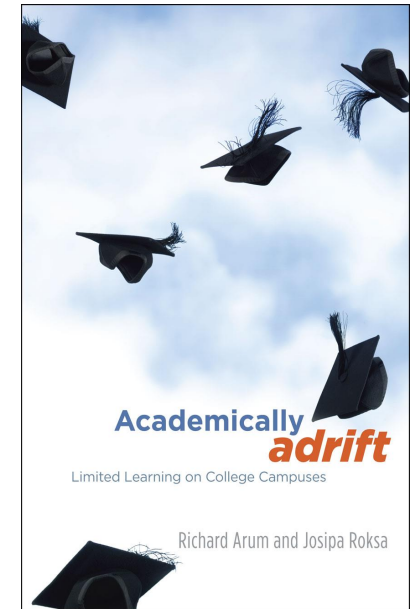
The book was based on the USA system, it influenced debate and the Learning gain projects in the UK.



# Academically Adrift

## Key findings

- Nearly half of all students did not improve their higher level cognitive skills
- Many students enter HE unprepared
- Undergraduate learning is not adequately prioritised
- Gaming by students and Teachers
- Undergraduate learning
  - Academic preparation
  - Factors after college
  - Personal / High School characteristics
- Long term national economic problems created by 'limited' learning gain



# HEFCE funded 13 pilot projects involving over 70 universities and further education colleges

Three broad approaches to measuring learning gain have emerged, including:

- measures of general cognitive gain – what students think and know;
- measures of soft skills development – affective measures of attitudes and how students feel;
- employability and career readiness – largely behavioural measures of activities students have undertaken in preparation for the world of work.

Internationally, the political appetite for educational measurement capable of capturing a metric of value for money and effectiveness has momentum.

Evan, C. et al (2018)

# What to measure

What are student expectations of higher education?

What do you want your students to achieve?

General benefits vs specific to course or institution?

- Social democratic values and action; civic engagement
- Advanced intellectual skills
- Advanced communication skills
- Interpersonal skills
- Vocational & employment preparedness
- Personal life quality enhancement
- Personal integrity
- Graduate school education preparedness
- Family expectations/reasons (Chan, Brown & Ludlow 2014)

# Learning Gain & The TEF\*

<b>Aspects of quality</b> <i>Areas of teaching and learning quality</i>	<b>Teaching Quality</b>	<b>Learning Environment</b>	<b>Student Outcome and Learning Gain</b>
<b>Criteria</b> <i>Statements that identify what assessors will be looking for</i>	Teaching Quality criteria	Learning Environment criteria	Students Outcomes and Learning Gain criteria
<b>Evidence</b> <i>The evidence base that will be used to form a judgement against the criteria made up of core metrics and additional evidence</i>	<b>Core metrics</b>		
	National Student Survey (Q1-40 teaching on course; Q5-9 assessment and feedback)	National Student Survey (Q10-12 – academic support) Non-continuation (HESA)	Employment/destination (DLHE) Potential highly-skilled jobs metric
	Additional evidence (provider submission)		
<b>Statement of findings</b> <i>Description of performance in each aspects</i>	Teaching Quality statement of findings	Learning Environment statement of findings	Student Outcomes and Learning Gain statement of findings
	<b>Possible Commendations</b>		
<b>Overall outcome</b> <i>TEF rating</i>	<b>TEF Rating</b>		

\* New name: Teaching Excellence and Student Outcomes Framework



# The literature on learning gain

In defining learning gain McGrath et al (2015) state it is:

“the distance travelled or the improvement in knowledge, skills, work-readiness and personal development demonstrated by students at two points in time”

HEFCE/OfS offer a more holistic definition of learning gain as ‘an attempt to measure the improvement in knowledge, skills, work-readiness and personal development made by students during their time spent in higher education’ (HEFCE/OfS, 2015–2017 ); this latter definition overcomes the potential issues associated with the limitations of two-point measurements designs, specifically response shift bias (Evans et al, 2018).

Learning Gain – the attempt to measure the different ways in which students benefit from their learning experience (BIS 2016a)

Colt et al (2011) discusses the terms: Absolute gain, Relative gain and Normalized gain, using stats, but what about qualitative data?

# Surface, Deep and Transfer of Learning

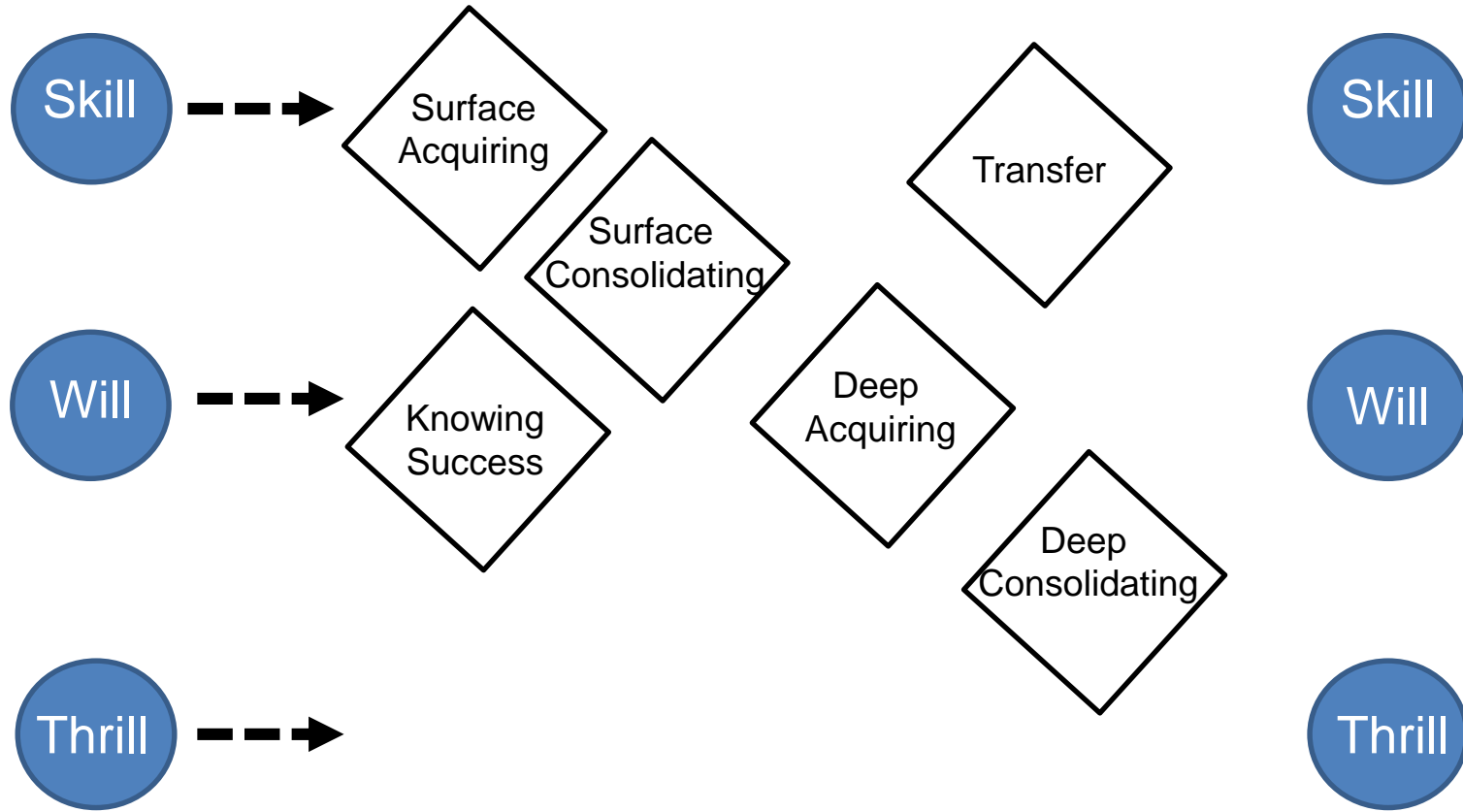
(Hattie, Fisher, Frey et al 2017)

<b>Surface</b>	<b>Deep</b>	<b>Transfer</b>
<ul style="list-style-type: none"><li>• Building initial understanding of concepts.</li><li>• Developing labels (vocabulary for the concepts).</li><li>• Correcting misconceptions and errors.</li><li>• Consolidating new learning.</li></ul>	<ul style="list-style-type: none"><li>• Establish connections between and among concepts.</li><li>• Extending concepts in order to make generalisations.</li><li>• Collaborating and solving authentic complex problems.</li><li>• Applying and practicing procedural skills.</li></ul>	<ul style="list-style-type: none"><li>• Applying concepts to new context and situations.</li><li>• Recognizing patterns and relating them to parallel concepts.</li><li>• Consolidating competencies and process through metacognitive awareness.</li></ul>

# A model of Learning

Hattie and Donoghue (2016)

Inputs → Surface → Deep → Transfer → Outputs

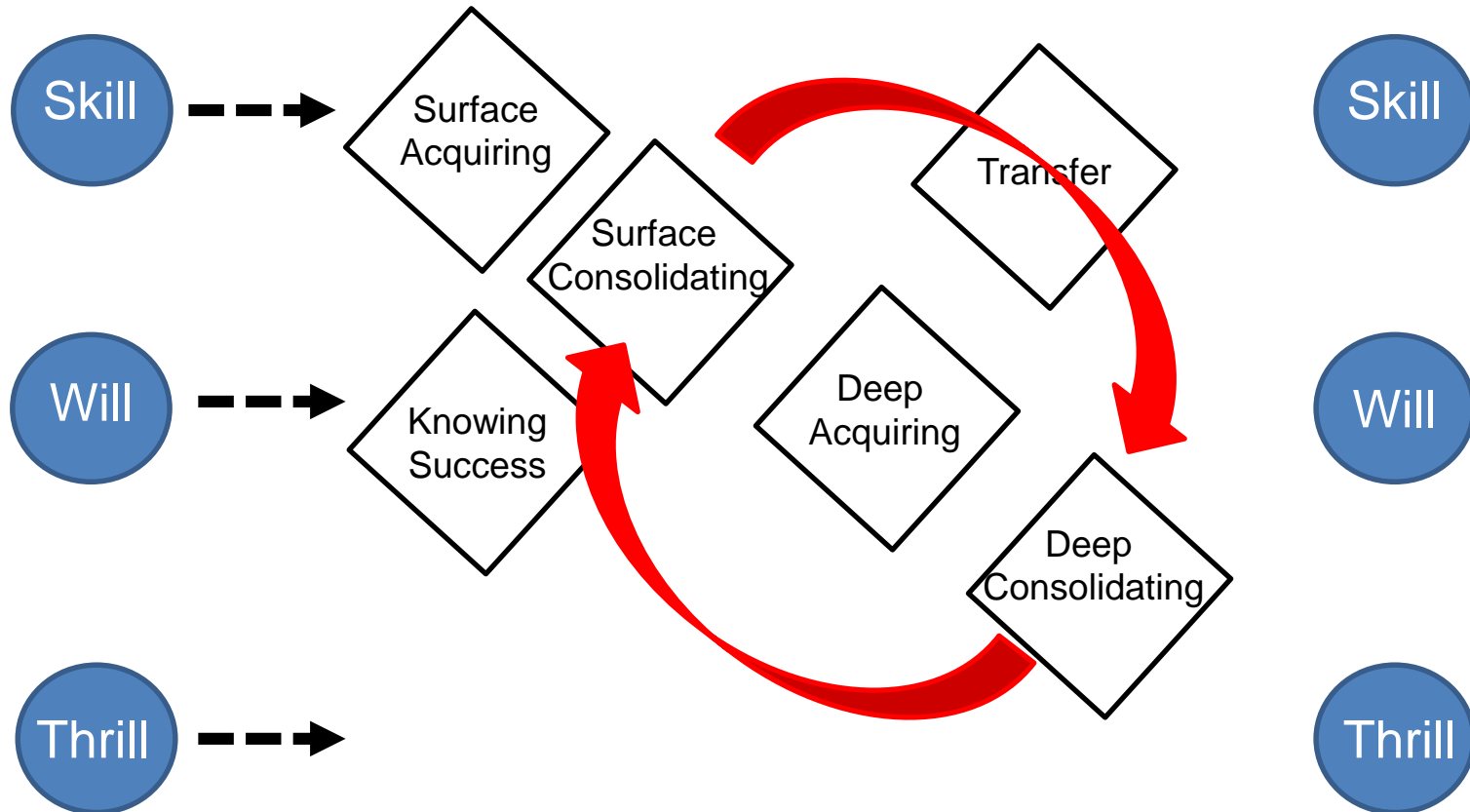


Environment

# A model of Learning

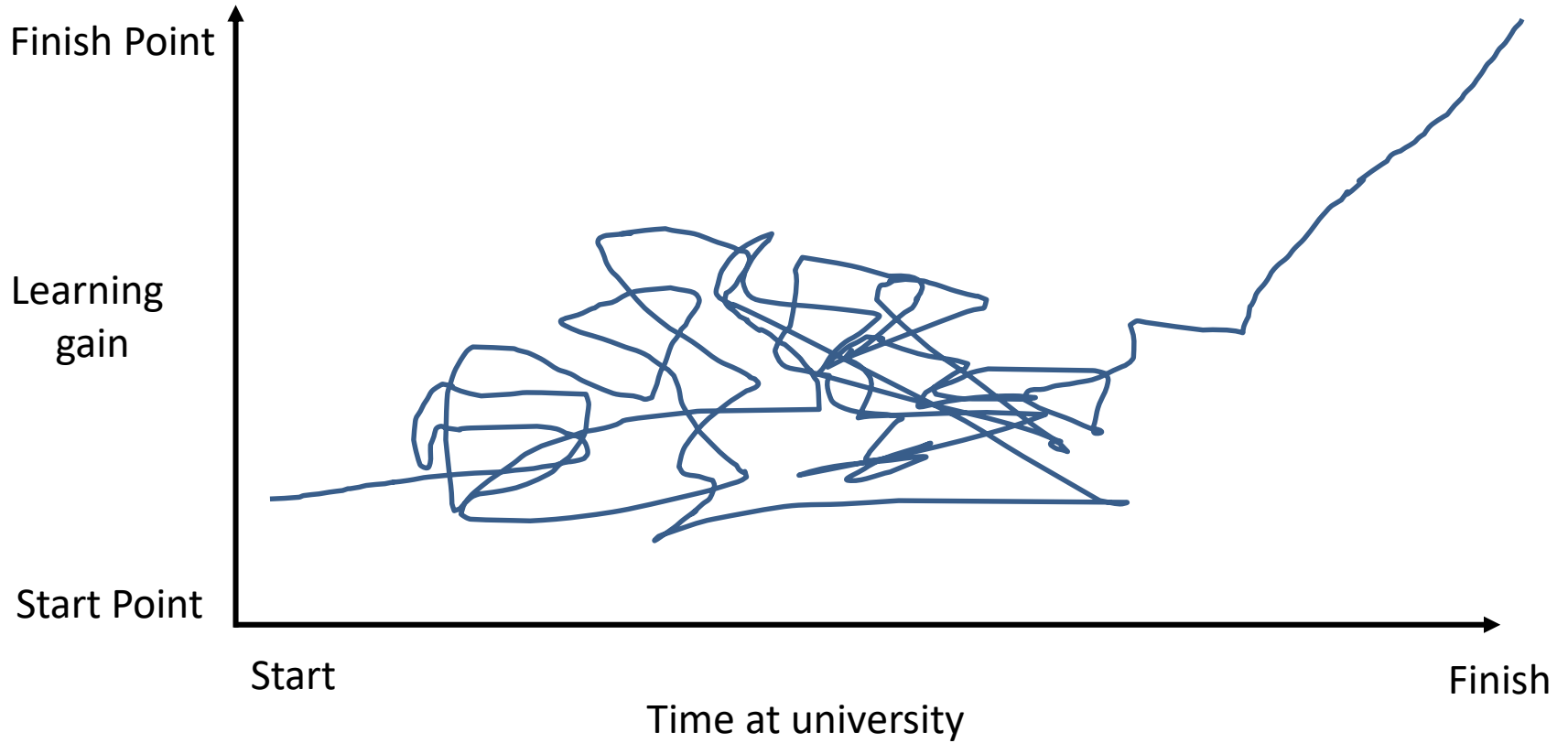
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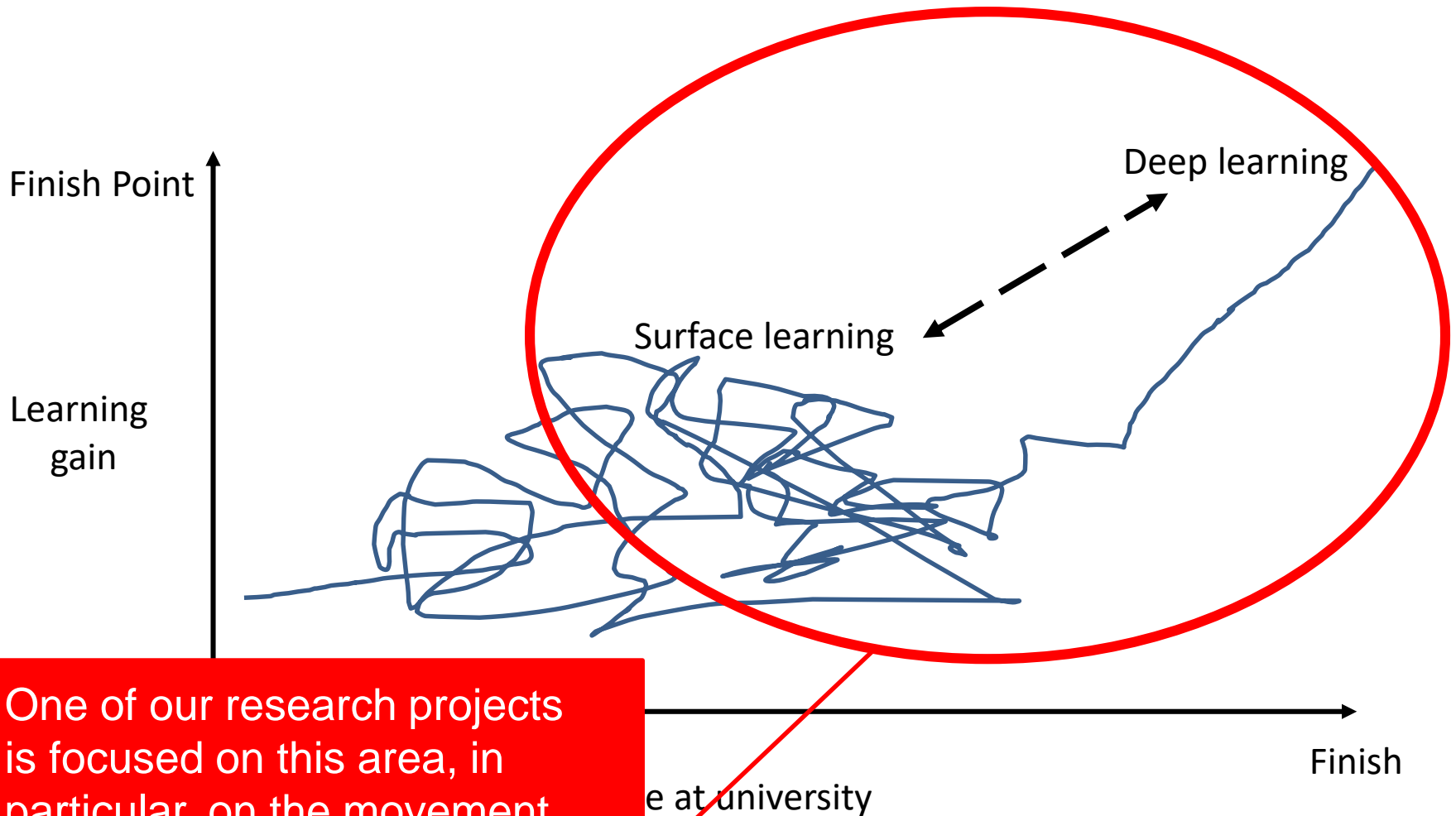


Environment

# Learning journey



# Learning journey and learning gain



One of our research projects is focused on this area, in particular, on the movement from surface to deep learning using the Creative Connections t

# Two of our research projects related to learning gain:

## Project 1

Paper to be presented at the SRHE annual conference Dec 2019

To what extent do board games facilitate deep learning in higher education?



## Project 2

### **Funding bid to research:**

The utility of a game-based learning tool in supporting students with additional learning needs in higher education: A Pilot Study

As we await the outcomes of Dame Shirley Pearce's review of the Teaching Excellence Framework (TEF), it is worth reflecting on what Sir Philip Augar's [Post 18 Review of Education and Funding](#) (May 2019) tells us about the possible future of the TEF.





Summary  
The use of  
big data,  
small data  
and any  
data, is here  
to stay.  
We need to  
be prepared!



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