CHALMERS

Entrepreneurial education and its assessment

Göteborg, May 22:nd, 2014
Martin Lackéus, Doctoral candidate in entrepreneurial education
Chalmers University of Technology, Sweden

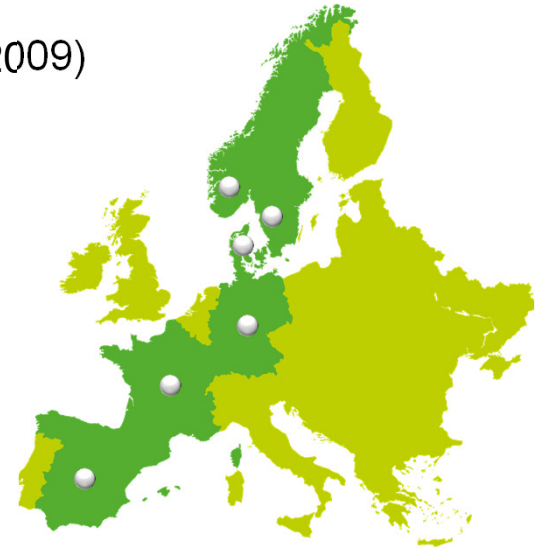
CHALMERS SCHOOL OF ENTREPRENEURSHIP

My background & current

Background:

- MSc in Industrial engineering & management, Chalmers Univ. of Technology
- Master degree from Chalmers School of Entrepreneurship (2000-2001)
- Former entrepreneur / co-founder / CEO of Vehco AB (2002-2009)

Di GASELL 2009



Today, since -09:

- Project manager at Chalmers School of Entrepreneurship, development projects financed by Swedish government
- PhD Candidate at Chalmers, with my research focus being ”Action based Entrepreneurial Education”

CHALMERS SCHOOL OF ENTRE PRENEUR SHIP

Today's agenda

Morning 9-10.30 and 10.30-11.00

- Two kinds of value creation
- What is ”entrepreneurial competencies”?
- Why are they seldom developed in education?
- How do we make people entrepreneurial?
- Some tools that seem to work
- Three supporting models and a platform

Morning 11.30-12.30

- Workshop – try some tools together

Afternoon 13.30-15.00

- Measuring entrepreneurial competencies
- An example: Chalmers and 23-yearolds
- Another example: Framtidsfrön and 13-yearolds
- The future of app based measurement
- The tool and its use

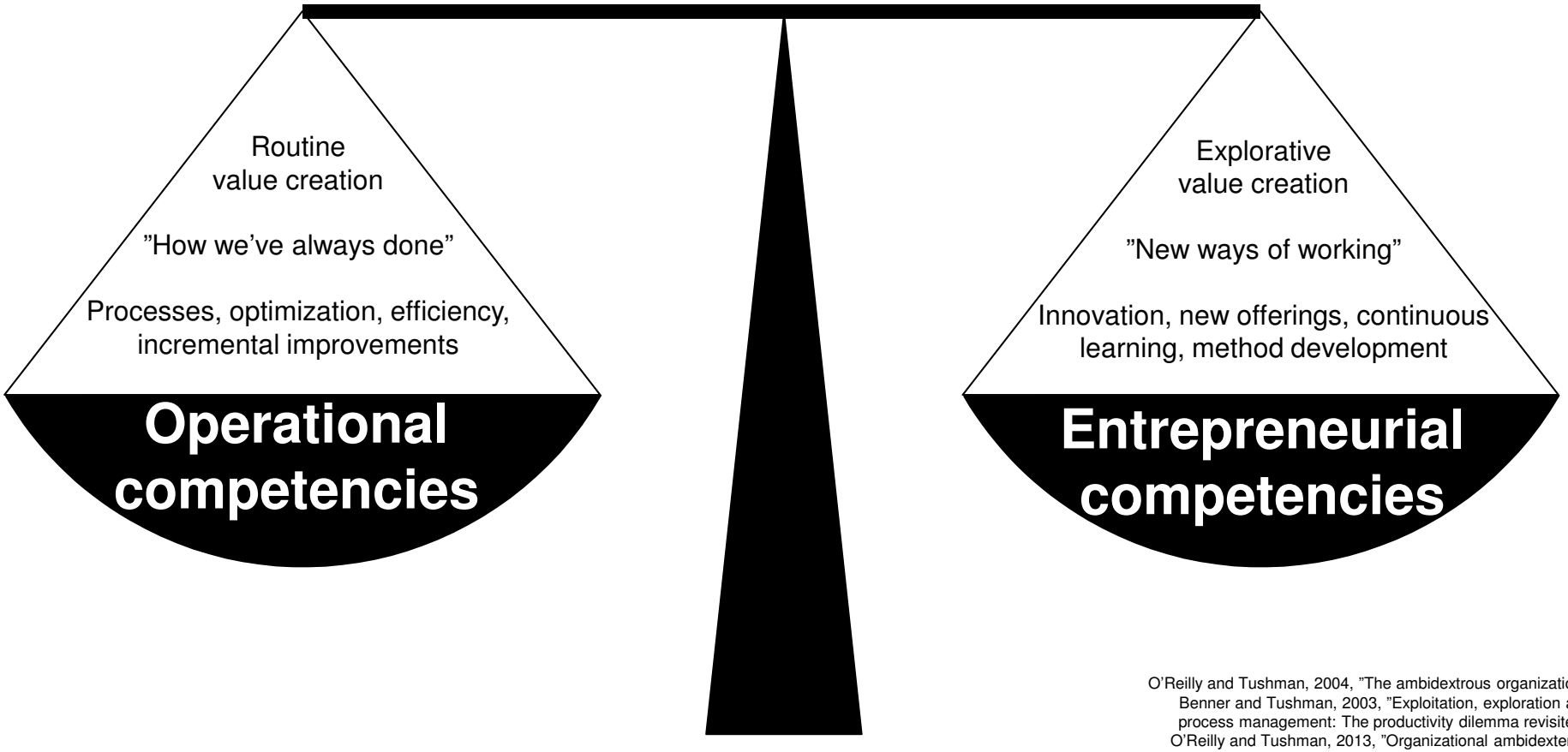
Afternoon 15.00-15.45

- What use of a measeurement tool do you see?

Two kinds of value creation

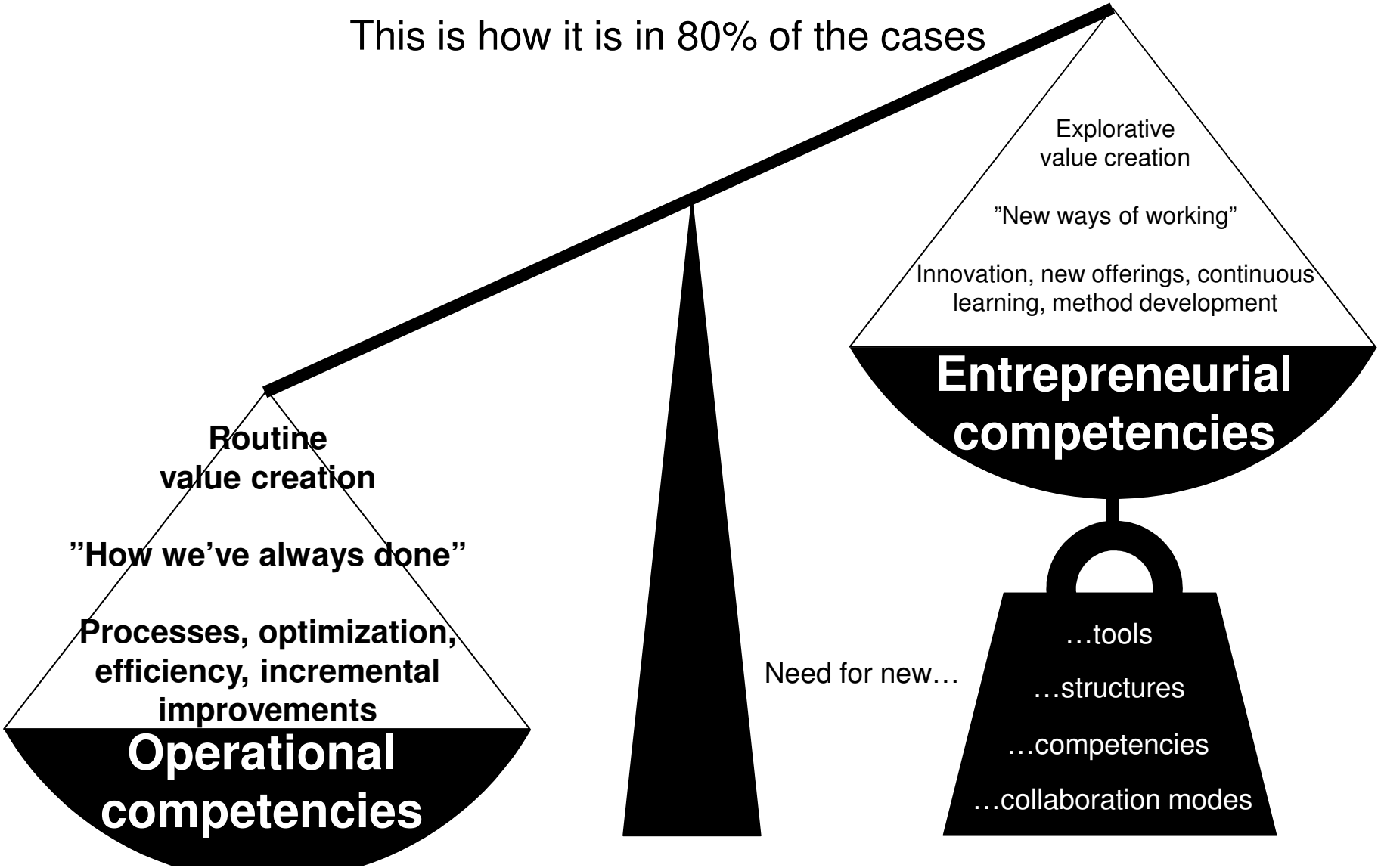
You want balance between routine value creation and explorative value creation

That is when productivity is maximized in an ever changing world



O’Reilly and Tushman, 2004, ”The ambidextrous organization”;
Benner and Tushman, 2003, ”Exploitation, exploration and process management: The productivity dilemma revisited”;
O’Reilly and Tushman, 2013, ”Organizational ambidexterity: Past, present and future”

Two kinds of value creation



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What is "entrepreneurial competencies"

PERSONAL DEVELOPMENT

Wide definition

(Mahieu, 2006; Fonden för Entreprenörskap, 2011)

- Acting on opportunities to create value – financial, cultural or societal value
- Creativity, action and self-confidence in focus
- Prepare individuals for a more uncertain world

FINANCIAL FOCUS

Narrow definition

(Mahieu, 2006)

- Business development skills, such as marketing, planning, accounting, HR
- Employing oneself
- Start a new company

VALUE CREATION

ORGANIZATION CREATION

Entrepreneurial…	*What are they?*
…knowledge	*Mental models, declarative knowledge, facts*
…skills	*Marketing, strategy, resource acquisition, opportunity identification, learning, interpersonal skills*
…attitudes	*Passion, self-efficacy, identity, proactiveness, perseverance, uncertainty tolerance*

"The skills in question include qualities such as the habit of learning, curiosity, creativity, initiative, teamwork and personal responsibility"

Mahieu, 2006, "Agents of change and policies of scale: a policy study of entrepreneurship and enterprise in education"

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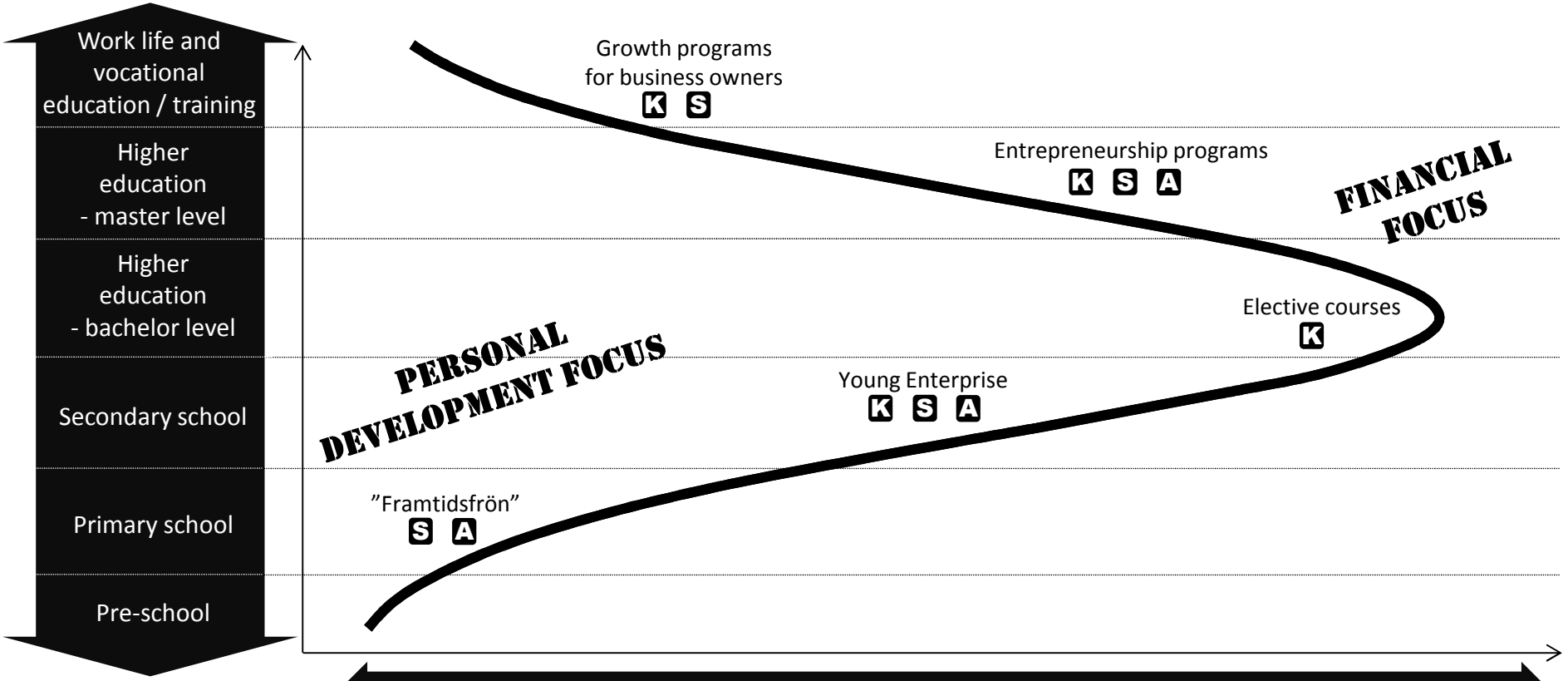

K = Knowledge

S = Skills

A = Attitudes

Practice oriented — Theory oriented

Educating ***through*** entrepreneurship — Educating ***for*** entrepreneurship — Educating ***about*** entrepreneurship

Wide definition concerning most people in society — Narrow definition concerning just some

Entrepreneurial — Entrepreneur

Enterprise education — Entrepreneurship education

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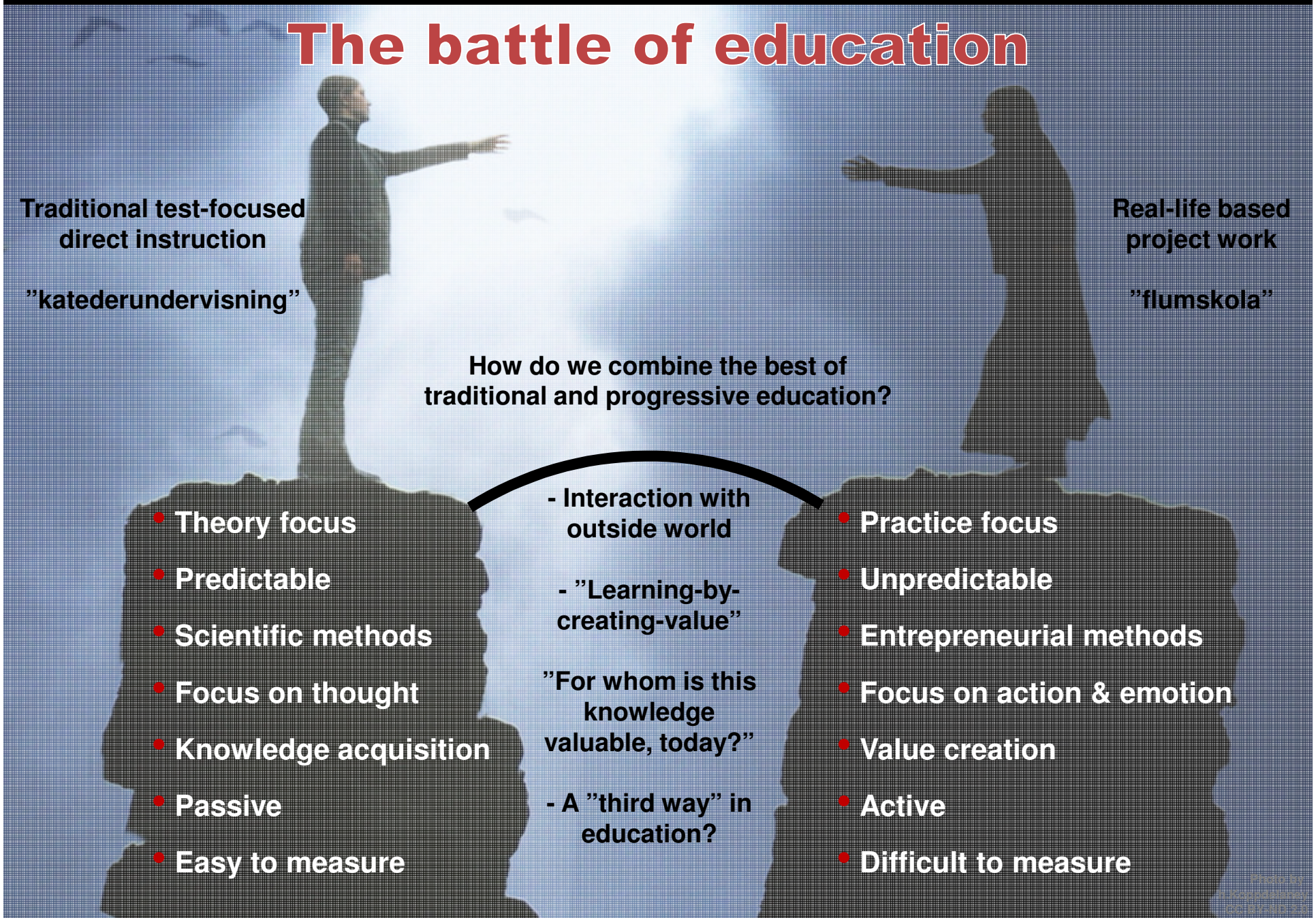
The battle of education



Traditional test-focused direct instruction

”katederundervisning”

Real-life based project work

”flumskola”

How do we combine the best of traditional and progressive education?

- Theory focus
- Predictable
- Scientific methods
- Focus on thought
- Knowledge acquisition
- Passive
- Easy to measure

- Interaction with outside world

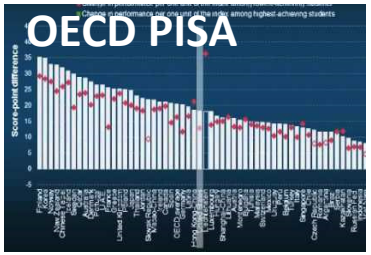
- ”Learning-by-creating-value”

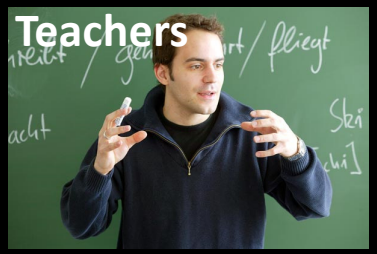
”For whom is this knowledge valuable, today?”

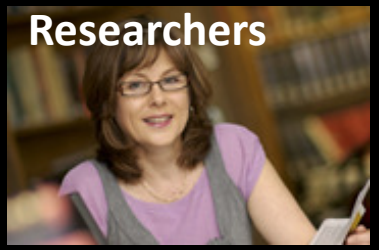
- A ”third way” in education?

- Practice focus
- Unpredictable
- Entrepreneurial methods
- Focus on action & emotion
- Value creation
- Active
- Difficult to measure

POSITIVISM	INTERPRETIVISM	
TRADITIONAL EDUCATION	PROGRESSIVE / CONSTRUCTIVIST EDUCATION	
TRADITIONAL EDUCATION	ENTREPRENEURIAL EDUCATION	
SCIENTIFIC METHOD	ENTREPRENEURIAL METHOD	
Simplicity	**Complexity**	
Science as…	…reductionist	…holistic (Deshpande, 1983; von Bertalanffy, 1972)
Learning as…	…standardized	…localized and child-centered (Tynjälä, 1999)
Entrepreneurship education as…	…single-subject	…multidisciplinary (Cotton, 1991)
A method to…	…harness nature	…unleash human nature (Sarasvathy and Venkataraman, 2010)
Individual	**Social**	
Scientist regards…	…reality a concrete structure	…reality a social construction (Cunliffe, 2011)
Learning as…	…individual work	…social interaction / storytelling (Jeffrey and Woods, 1998; Egan, 2008)
Entrepreneurship education as…	…know-that	…know-who and know-how (Cotton, 1991)
A method for the…	…objective	…intersubjective (Sarasvathy and Venkataraman, 2010)
Content	**Process**	
Science process…	…linear	…iterative (Cunliffe, 2011)
Learning activities with…	…product focus	…process focus (Jeffrey and Woods, 1998)
Entrepreneurship education as…	…content	…process (Cotton, 1991)
A method that is…	…linear	…iterative (Sarasvathy, 2001)
Detached	**Attached**	
Science should be…	…dispassionate / value free	… meaning-making / …value-bound (Cunliffe, 2011; Guba and Lincoln, 1985)
A classroom where…	…learner is passive	…learner is active and emotional (Tynjälä, 1999; Egan, 2008)
Entrepreneurship education as…	…absolute detachment	…emotional involvement (Gibb, 1987)
A method that is…	…transaction based	…commitment based (Sarasvathy and Dew, 2005)
Theory	**Practice**	
Science about…	…objective reality	…lived experience (Weber, 2004)
Learning focusing on…	…inert knowledge	…practical experiences (Tynjälä, 1999; Egan, 2008)
Entrepreneurship education with…	…emphasis on theory	…emphasis on creation (Ollila and Williams Middleton, 2011)
A method for…	…observation & “law” discovery	…action & co-creation (Sarasvathy and Venkataraman, 2010)







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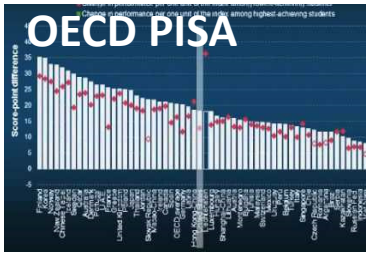

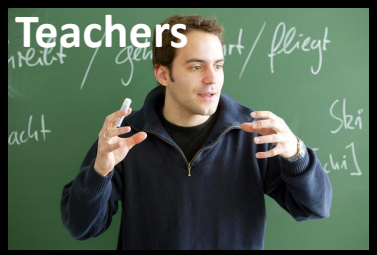

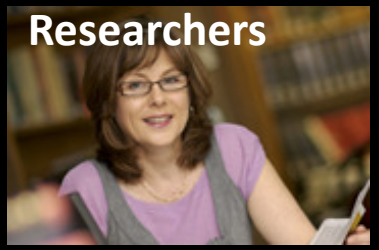

Assessment challenges in today's schools

"…a focus on rigorous experiments evaluating replicable programs and practices is essential to build confidence in educational research among policymakers and educators."

Slavin, 2002, "Evidence-Based Education Policies: Transforming Educational Practice and Research

"…increased globalization gives us no alternative to focusing on increasing efficiency through testing, accountability, and choice. … Standardized testing will increase educational opportunity and ensure greater assessment objectivity than teachers provide"

Hursh, 2007, "Assessing No Child Left Behind and the rise of neoliberal education policies"

"Pisa enriches [education] because it encourages countries to look at ideas from around the world."

Andreas Schleicher, head of Pisa

"The danger here is that we end up valuing what is measured, rather than that we engage in measurement of what we value.."

Biesta, 2009, "Good education in an age of measurement: on the need to reconnect with the question of purpose in education"

"The complexities of learning and fundamental pedagogies are being lost in preference for an over-reliance on data systems that are based on a shallow and narrow set of standardised measures."

Robinson, 2011, "Diluting education? An ethnographic study of change in an Australian Ministry of Education"

"the new Pisa regime, with its continuous cycle of global testing, harms our children and impoverishes our classrooms, as it inevitably involves more and longer batteries of multiple-choice testing, more scripted "vendor"-made lessons, and less autonomy for teachers.

Letter from 100 educational academics to OECD, calling to cancel next round of PISA tests

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- What use of a measeurement tool do you see?

How do we make people entrepreneurial?

- Very few shortcuts!
  - Not by telling them ”Be creative!” ”Be brave!” ”Just do it!”, read a book or listen to a guest lecturer
- Many say the only way is ”Learning-by-doing”
- But… learning-by-doing-*what*?
  - Start a real company? Solve a problem? Write a business plan?
- There are better and easier ways…
  - A whole new toolbox has emerged the last decade where focus is on **value creation** instead of organization creation
  - Chalmers has created a platform built on this, together with Swedish foundation Drivhuset
  - Centered around modern tools such as”Business Model Canvas”, ”NABC”, SPIN”, ”Effectuation”, etc etc
- It is the emotional events that do the trick!

DRIVHUSET

I SAMARBETE MED CHALMERS SCHOOL OF ENTREPRENEURSHIP


Steve Blank

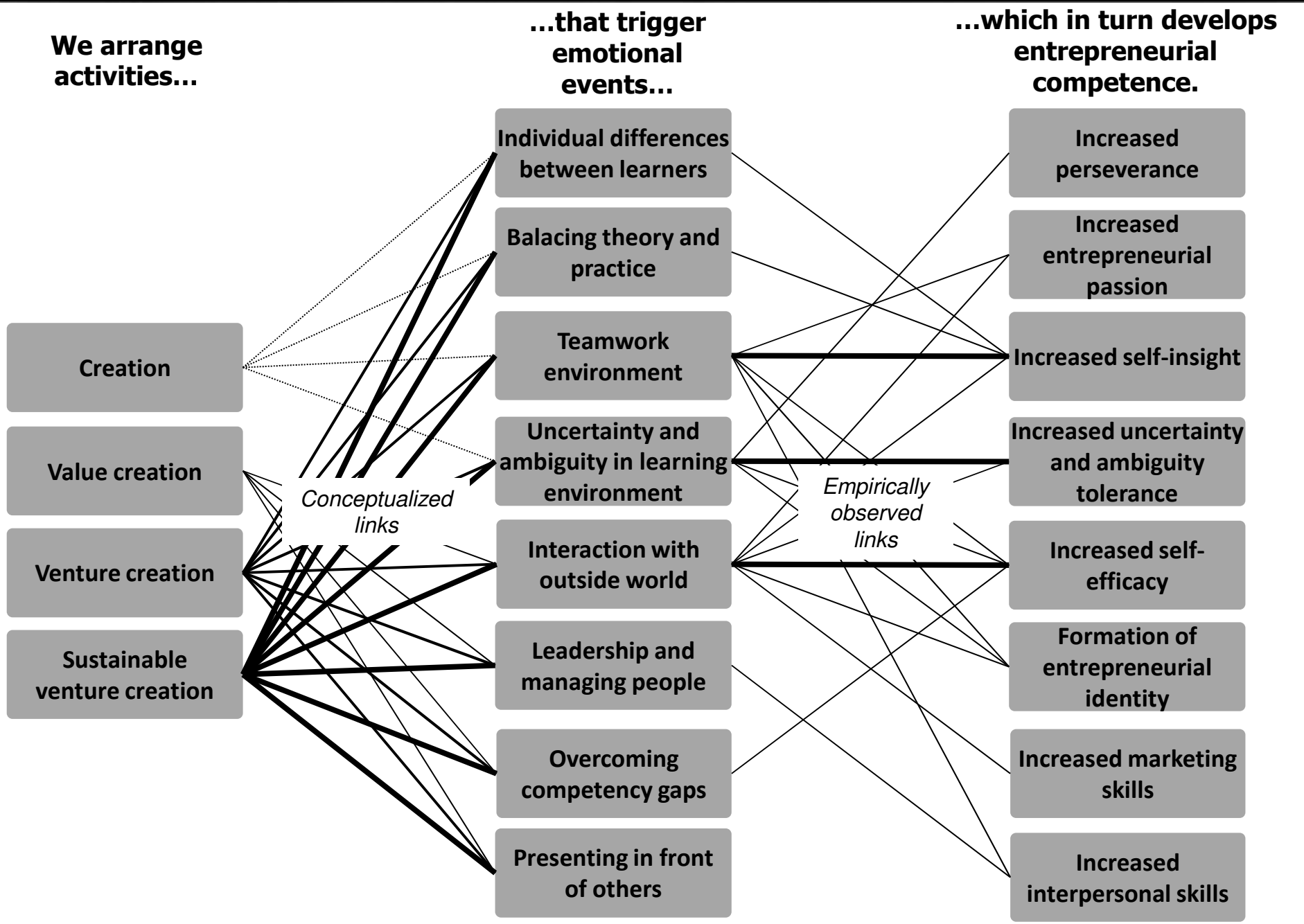

Saras Sarasvathy


Alexander Osterwalder

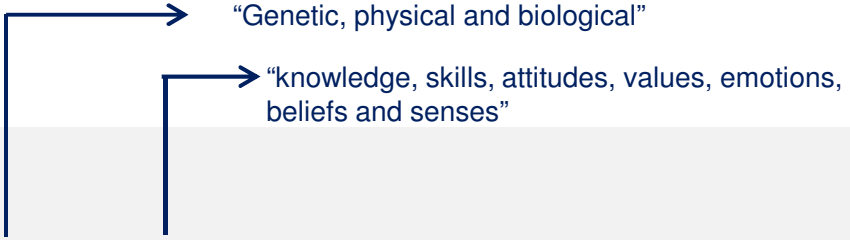
We arrange activities…
Creation, value creation, organization creation, etc.

…that trigger emotional events…
Interaction with outside world, uncertainty, team work, pitching, etc.

…which in turn develops entrepreneurial competence.
Self-efficacy, passion, identity, proactivity, perseverance, uncertainty tolerance etc


We arrange activities...
...that trigger emotional events...
...which in turn develops entrepreneurial competence.
Creation
Value creation
Venture creation
Sustainable venture creation
Conceptualized links
Individual differences between learners
Balacing theory and practice
Teamwork environment
Uncertainty and ambiguity in learning environment
Interaction with outside world
Leadership and managing people
Overcoming competency gaps
Presenting in front of others
Empirically observed links
Increased perseverance
Increased entrepreneurial passion
Increased self-insight
Increased uncertainty and ambiguity tolerance
Increased self-efficacy
Formation of entrepreneurial identity
Increased marketing skills
Increased interpersonal skills

But... why emotions?



What is learning?

Learning [is when] the whole person - body and mind - experiences a social situation, the perceived content of which is then transmitted **cognitively**, **emotively** or **practically** (or through a combination) and integrated into the person's individual biography resulting in a changed (or more experienced) person.

Peter Jarvis, "Towards a comprehensive theory of human learning", 2006, sid 13

What role does emotion play for learning?

"Emotions have diagnostic value for the teacher because they reveal [learners'] underlying cognitions, commitments and concerns."

Monique Boekaerts, "The crucial role of motivation and emotion in classroom learning ", 2010, p.91, in the book "The Nature of Learning"

"Emotional dimensions provide the foundation on which practical, conceptual, and imaginal modes of learning rest. "

John M. Dirkx, "The Power of Feelings: Emotion, Imagination, and the Construction of Meaning in Adult Learning", 2001, p.68

"Without attention to the emotions, educational reform efforts may ignore and even damage some of the most fundamental aspects of what teachers do."

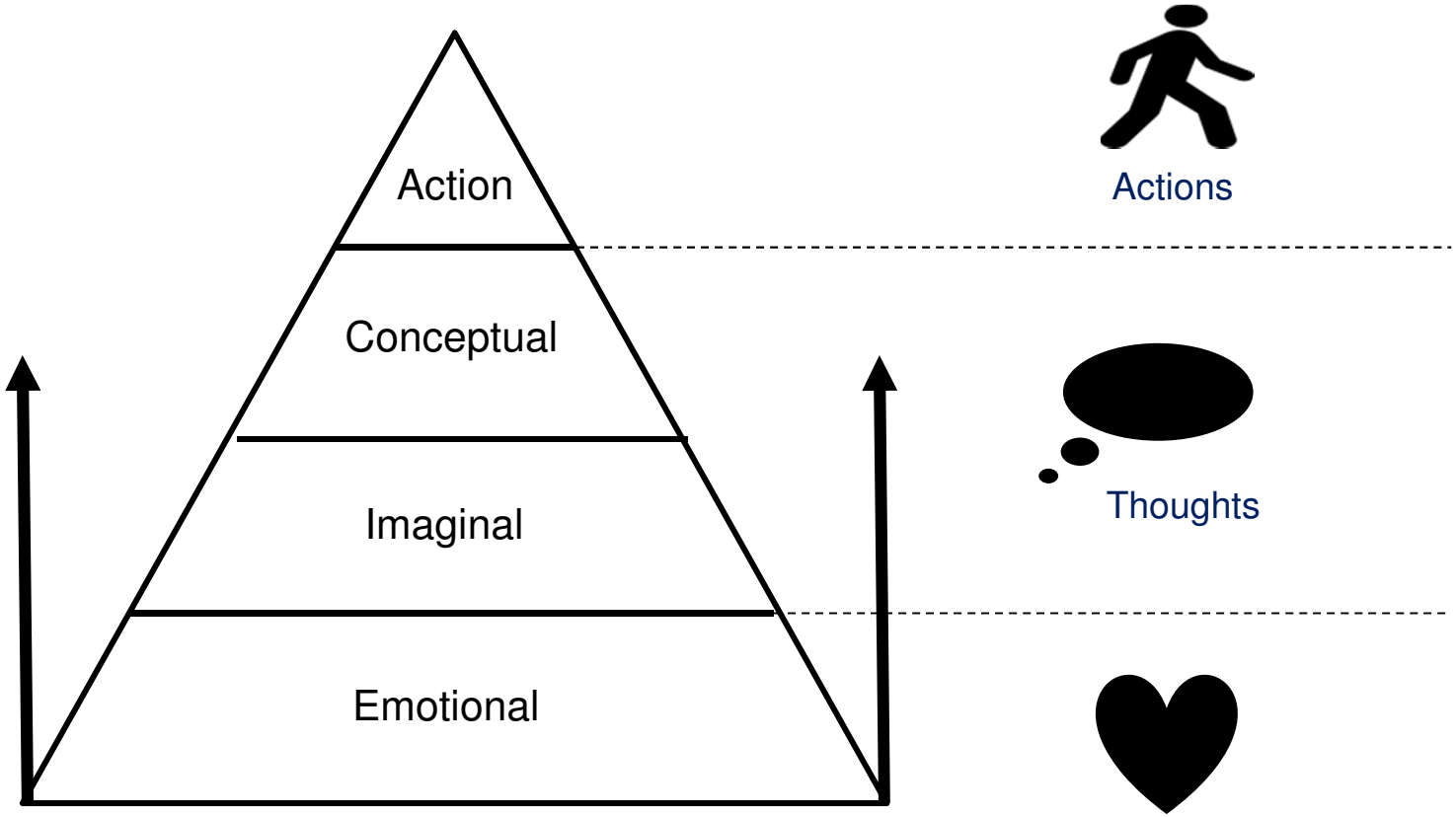
Andy Hargreaves, "The Emotions of Teaching and Educational Change", 2005, p.294

"Both the early- and late- acquired prefrontal damage patients show [that] knowledge and reasoning divorced from emotional implications and learning lack meaning and motivation and are of little use in the real world."

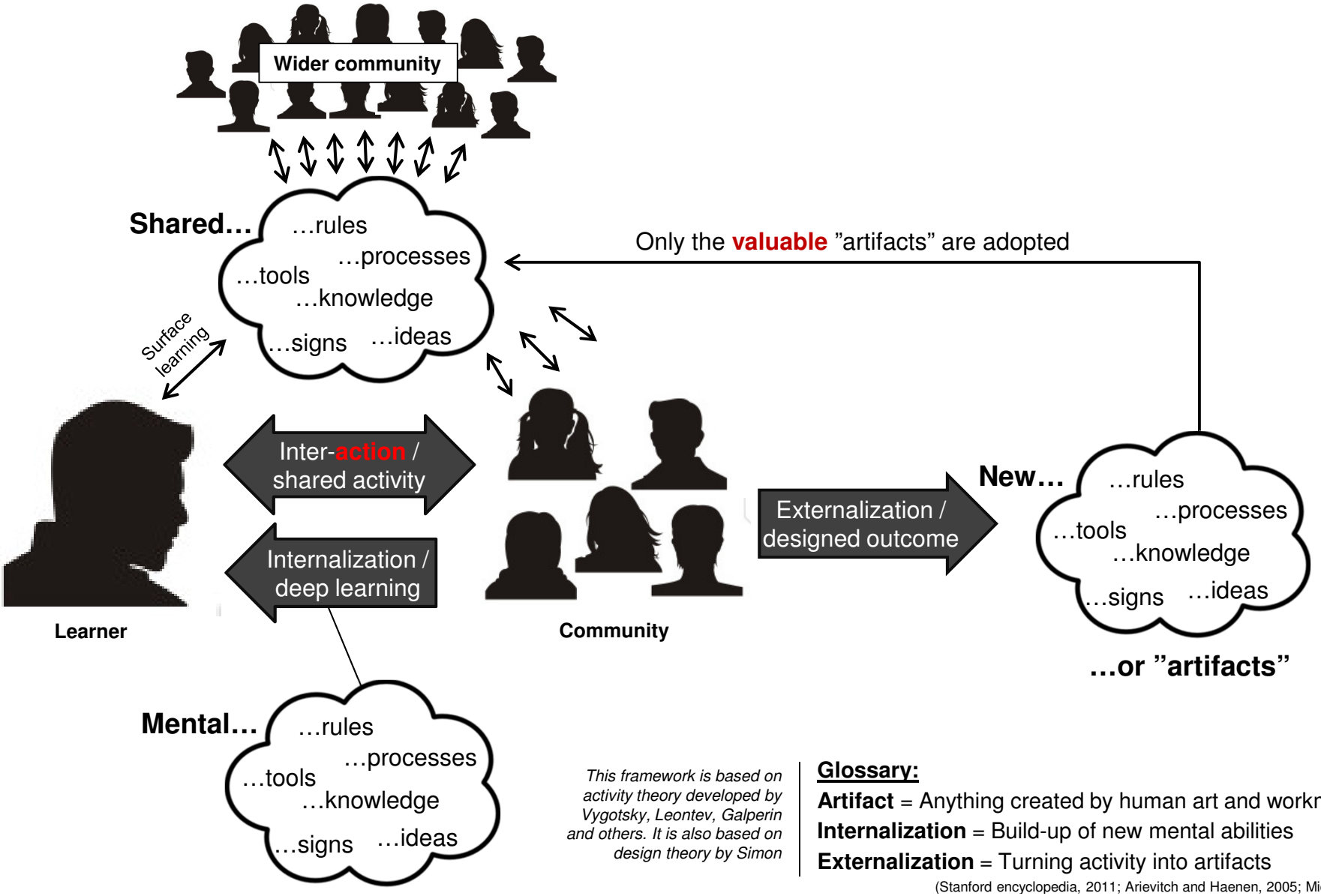
Mary Helen Immordino-Yang & Antonio Damasio, "We Feel, Therefore We Learn: The Relevance of Affective and Social Neuroscience to Education", 2011, p.128

Theoretical basis of learning

John Heron's model of "multi-modal learning"



How learning by doing works



This framework is based on activity theory developed by Vygotsky, Leontev, Galperin and others. It is also based on design theory by Simon

Glossary:

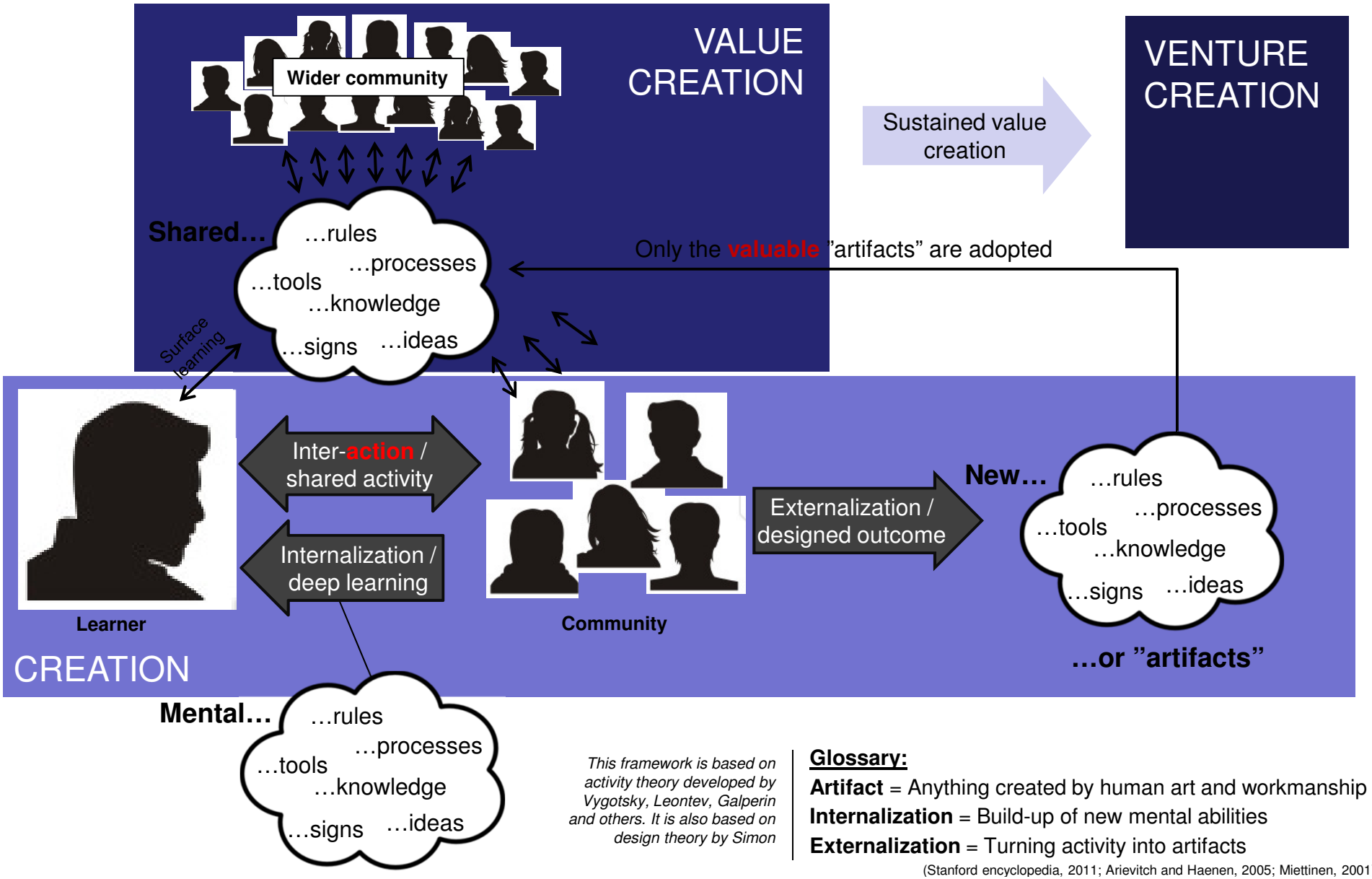
Artifact = Anything created by human art and workmanship

Internalization = Build-up of new mental abilities

Externalization = Turning activity into artifacts

(Stanford encyclopedia, 2011; Arievitch and Haenen, 2005; Miettinen, 2001)

How learning by doing works



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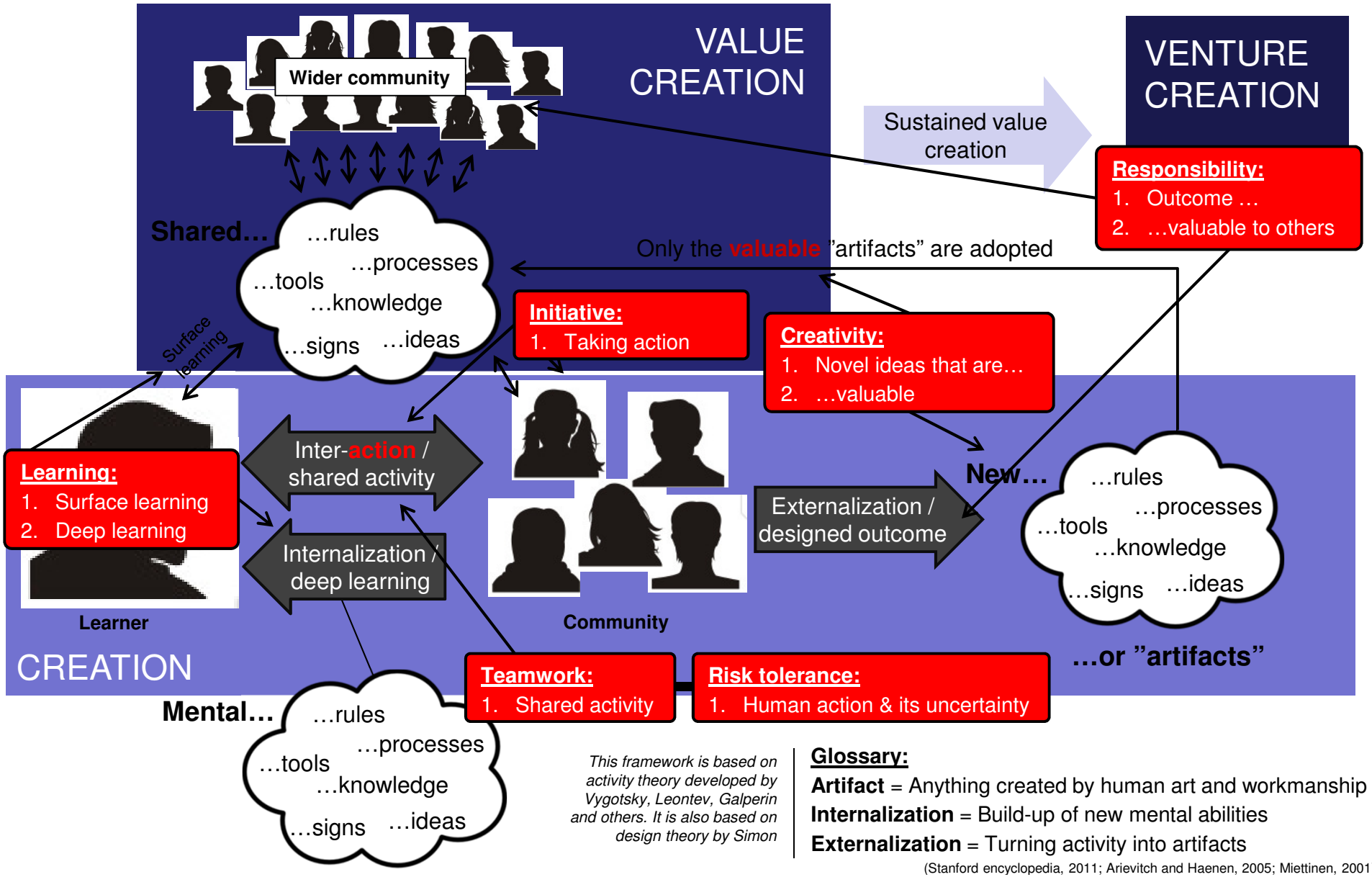

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The altruistic paradox*

- Bridging between traditional and progressive education

We get more motivated by creating value for others today than by creating value for ourselves in a distant future.

By letting learners act on and find answers to the question:
"For whom is this knowledge valuable in 15 minutes?"
high levels of motivation could be triggered, fuelling the learning process.

Instead of saying "You will have use for this knowledge in 15 years".

I call this "learning-by-creating-value"

* Further outlined in my litentiate thesis "Developing Entrepreneurial Competencies", available for download at vcplist.com/blog

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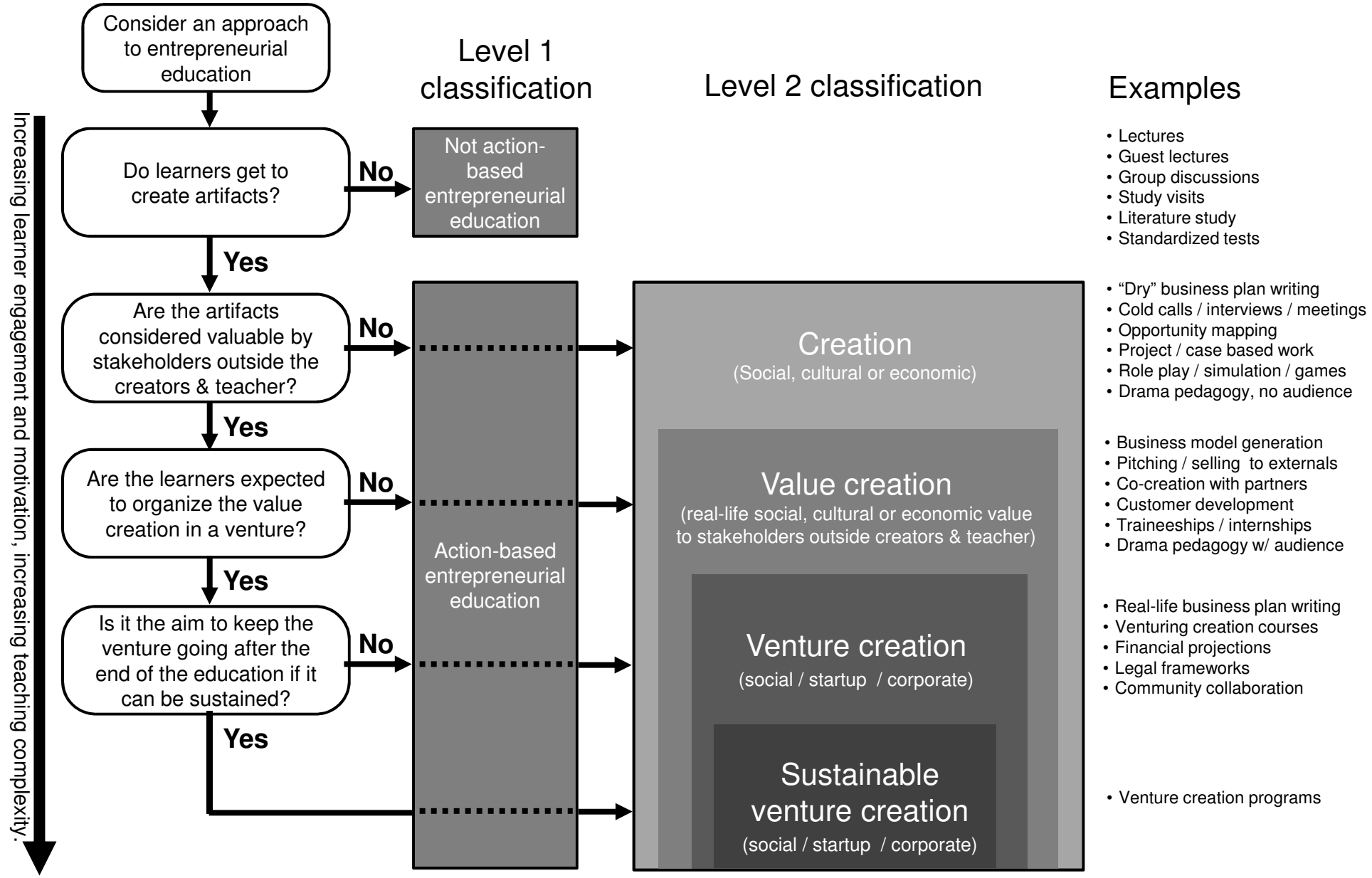
Classification of entrepreneurial education:



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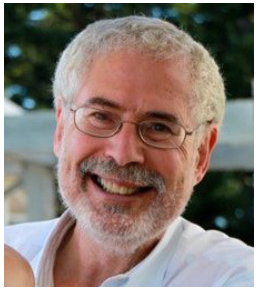
Some new value creation tools

And the people behind them

- Effectuation → 
  Saras Sarasvathy
- Customer development → 
  Steve Blank
- Lean startup → 
  Eric Ries
- Business Model Canvas → 
  Alexander Osterwalder
- Appreciative Inquiry → 
  David Cooperrider

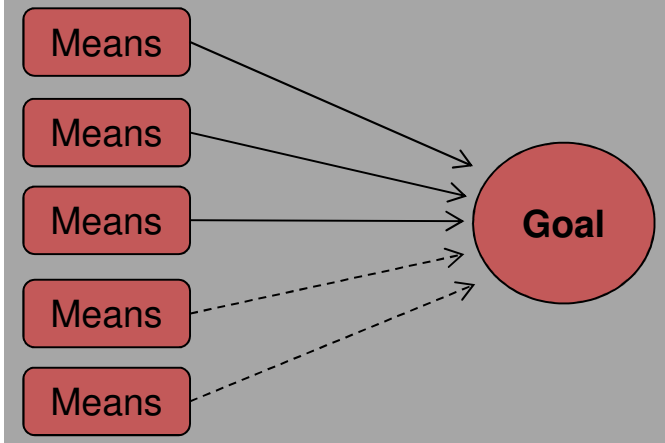
But they all might need to be washed from business words!

Effectuation

Causation

For what cause am I doing this

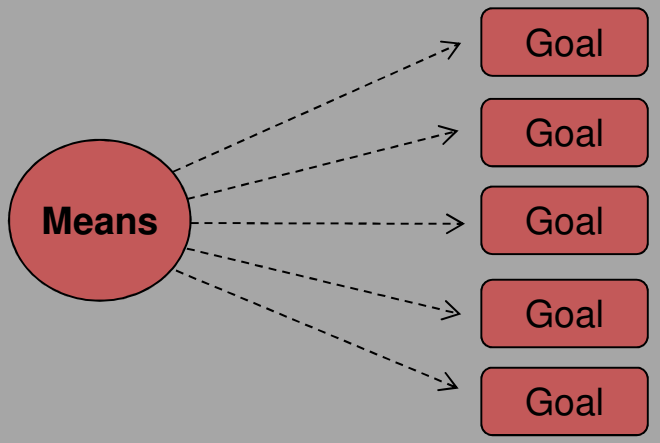
How most people thought expert entrepreneurs did



Effectuation

What could be the effect of my resources?

What Sarasvathy found out about how expert entrepreneurs do



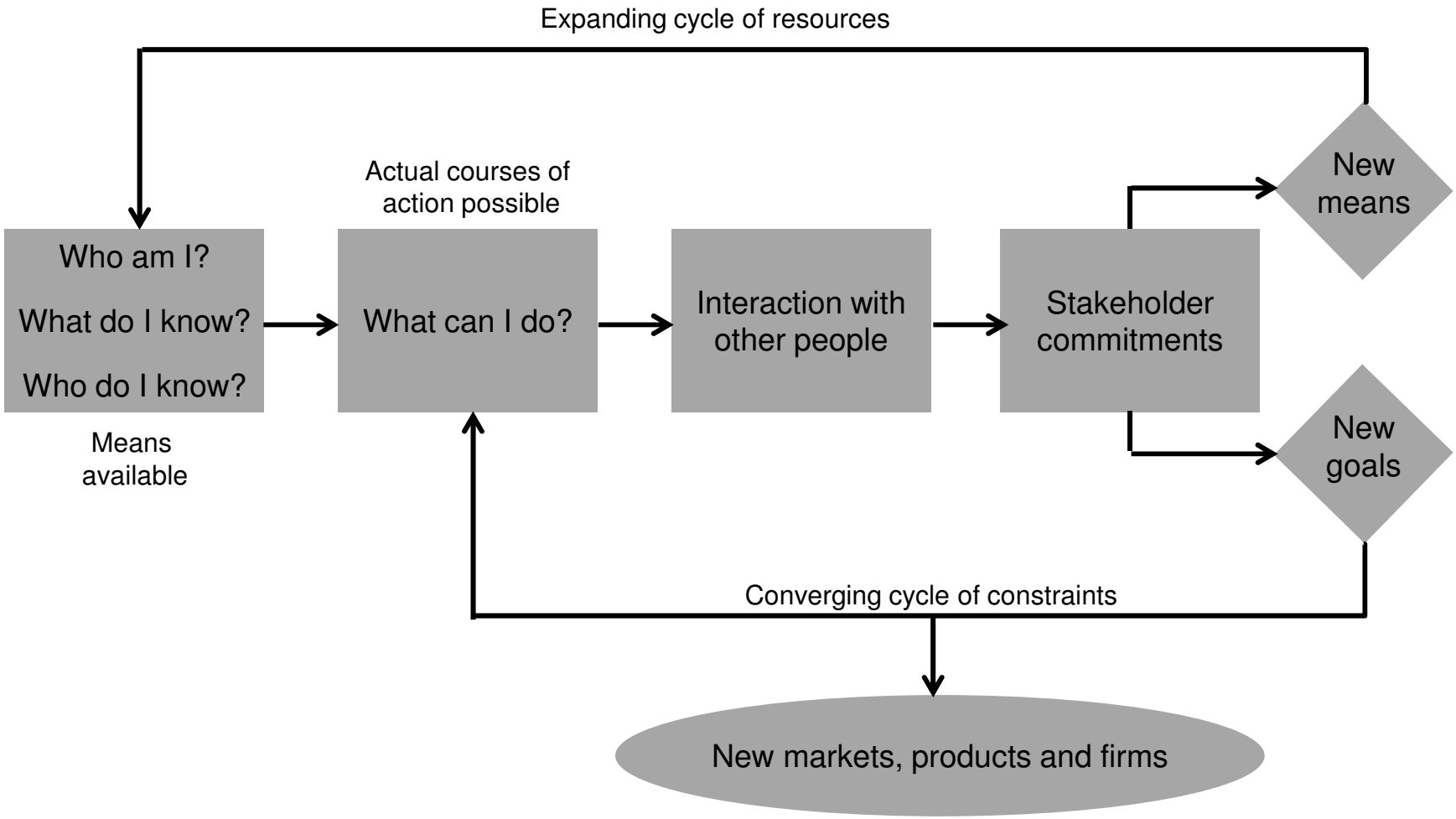
Comparing the two approaches

Causation For what cause am I doing this	⟷	Effectuation What could be the effect of my resources?
Starts with goal	⟷	Starts with given means
Focus on expected returns	⟷	Focus on affordable loss
Competition attitude	⟷	Cooperation attitude
Predictability through control	⟷	Control reduces need to predict
Good for existing markets	⟷	Good for new kinds of markets
Linear model	⟷	Cyclical model

Comparing the two approaches

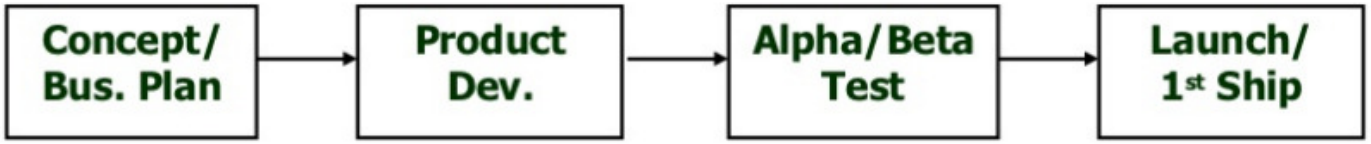
The five principles of effectuation		Effectuation What could be the effect of my resources?
”Bird-in-hand principle”	←	Starts with given means
”Affordable loss principle”	←	Focus on affordable loss
”Crazy quilt principle”	←	Cooperation attitude
”Lemonade principle”	←	Control reduces need to predict
”Pilot-in-the-plane principle”	←	Good for new kinds of markets
		Cyclical model

The effectuation cycle

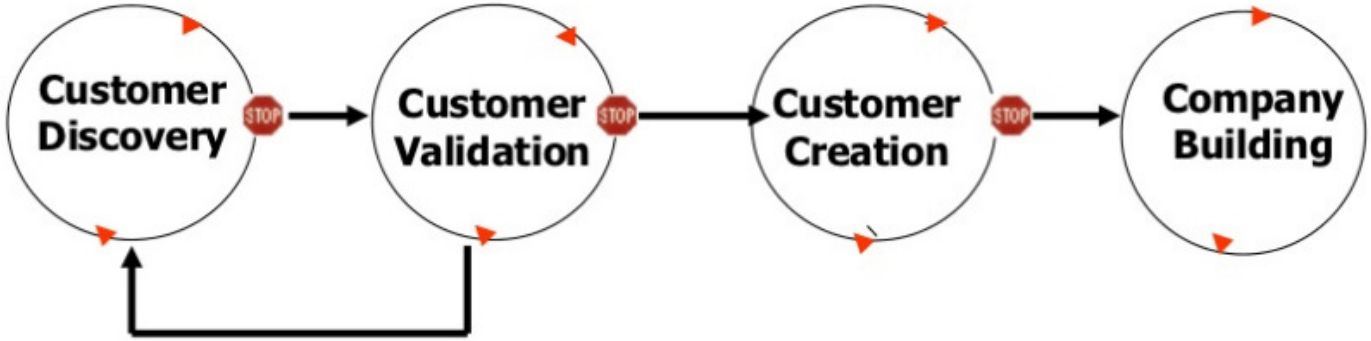


Customer development / Lean Startup

Traditional product development



Customer development



- Stop selling, start listening
- Test your hypotheses
- What are your customers' problems?
- Are you solving them?

- Develop a repeatable sales process
- Get the first couple of customers that pay
- Validate the financial model

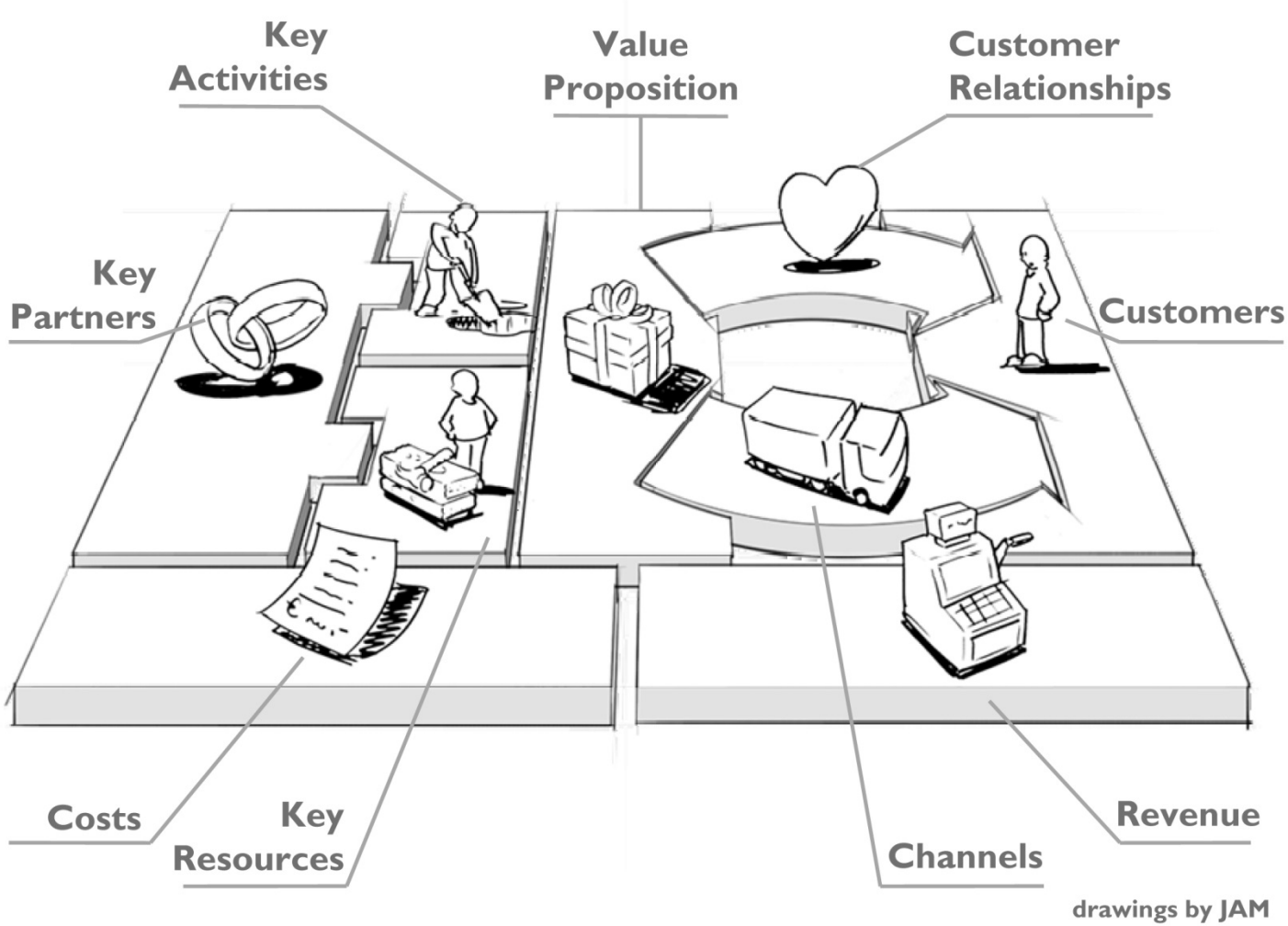
- Grow from few to many customers
- Build a sales execution process
- Adapt to your type of market – existing or new?

- Build your company's organization
- Change people if necessary

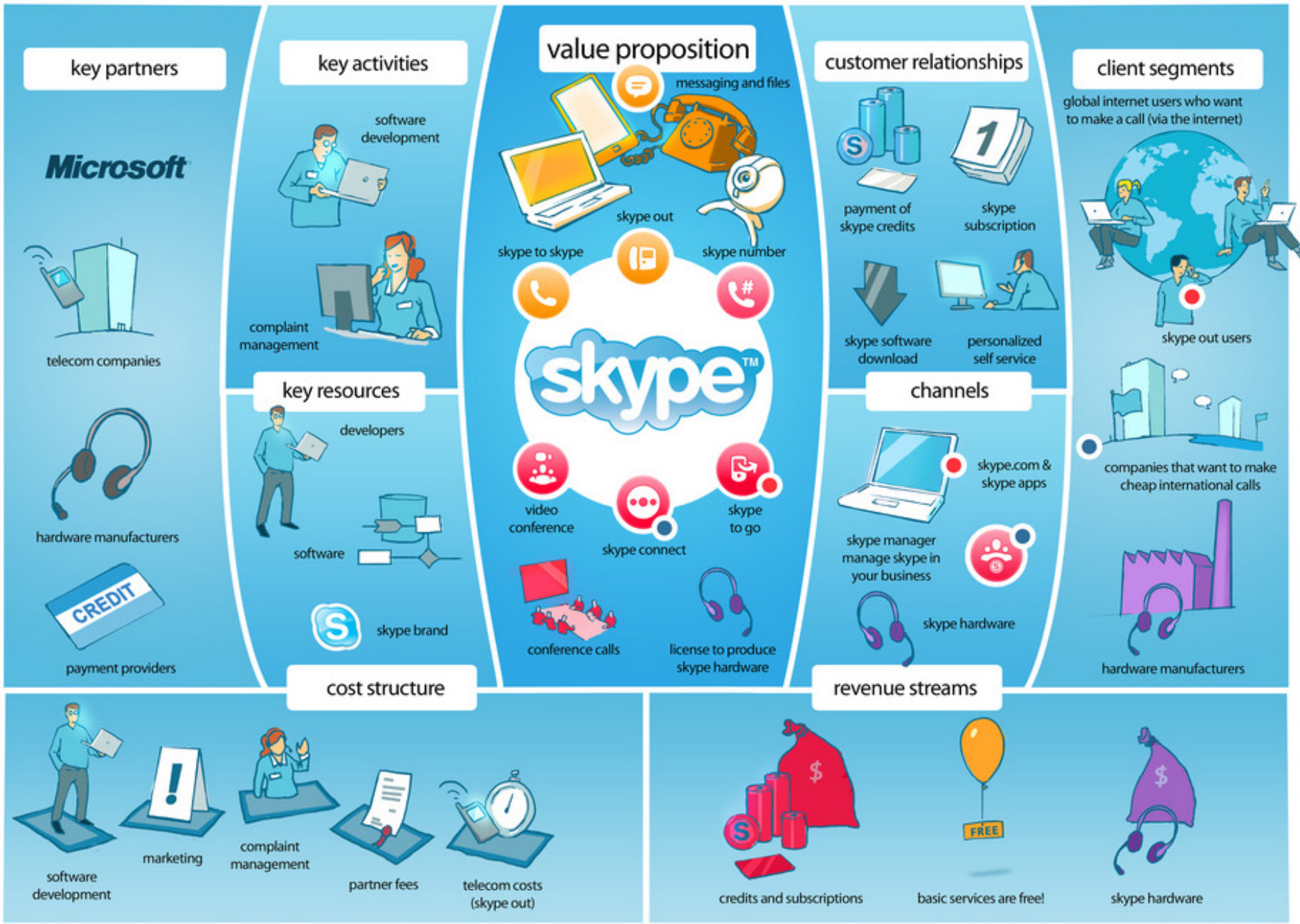
Search phase

Execution phase

Business Model Canvas



CHALMERS SCHOOL OF ENTREPRENEURSHIP



facebook

key partners

facebook app & game developers

key activities

platform development and maintenance

value proposition

customer relationships

long term, sticky relationship plus network effects

customer segments

everyone on the internet, because people are social

fortune 500 as well as SME & micro advertisers

facebook app & game developers

key resources

smart people and technology

the brand, and huge user base

channels

facebook.com

cost structure

~3000 employees to operate the entire platform with over 600 million users

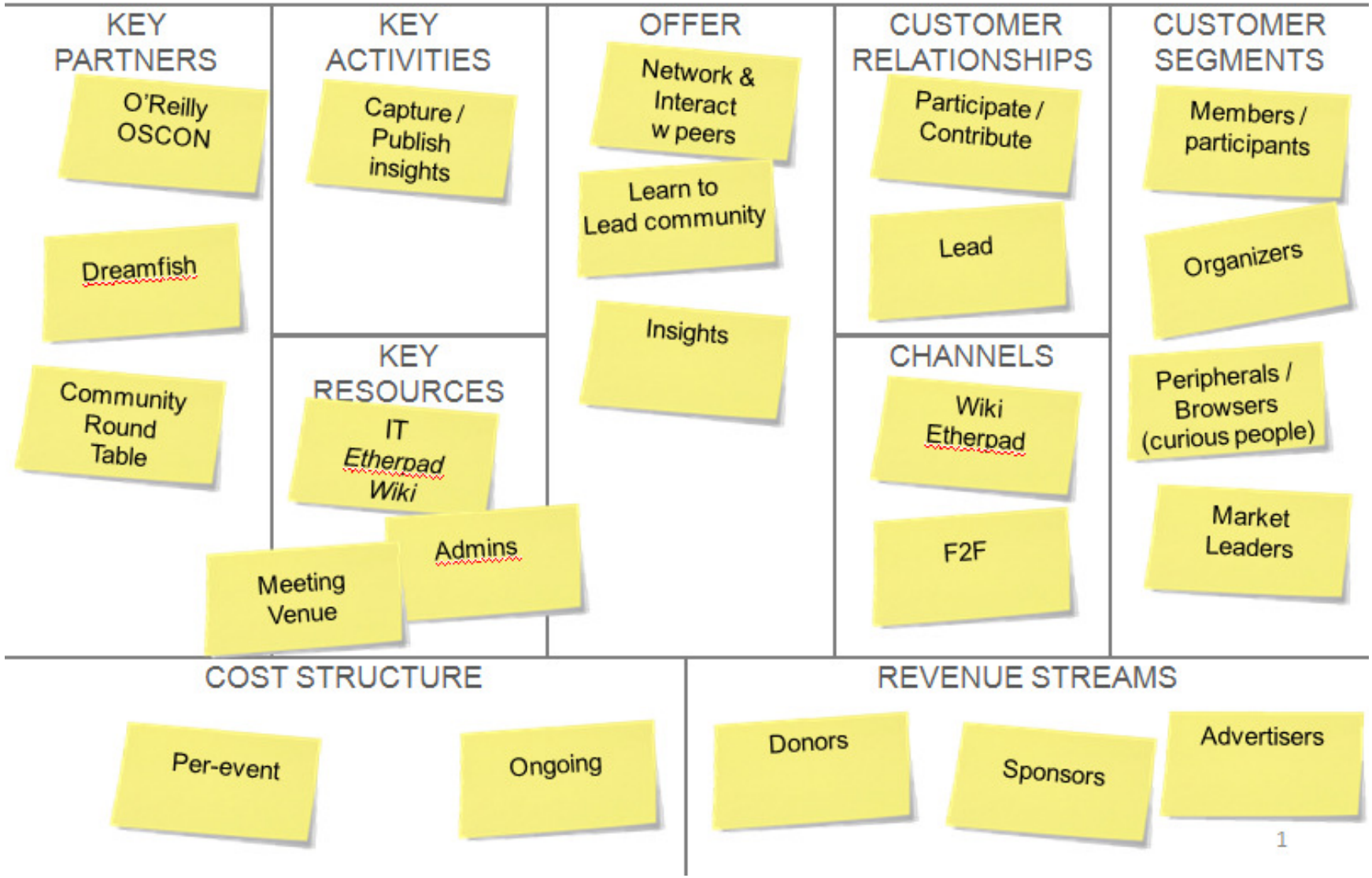
technology & maintenance

revenue streams

advertising revenue

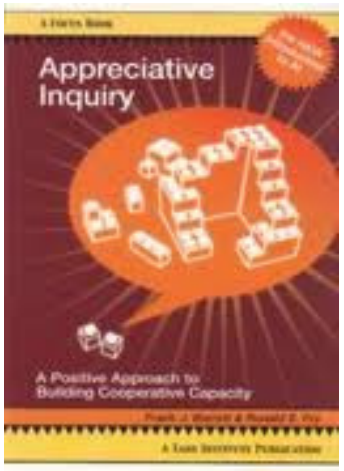
30% cut on facebook credits

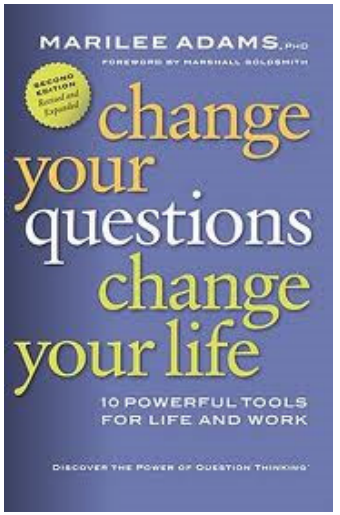
Community Leadership Summit Business Model



Appreciative Inquiry

- An appreciating and strengths based view
  - Basic assumption – in every organization there are things that work well
  - Let's find our strengths and what works well, and expand this
  - Opposite of exporing one's problems – "Let's fix what's wrong and let the strengths take care of themselves" (Gallop Poll)
- Can be used for:
  - Learning from previous experiences
  - Involvement of an entire organization in change projects
  - Motivate and empower people
  - Build a future vision shared by many people
- Especially useful for change management





" Great results begin with great questions"
– Marilee Adams

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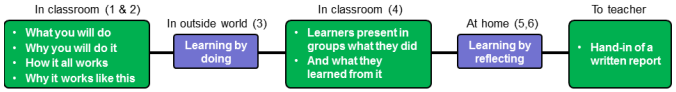
- The tool and its use

Afternoon 15.00-15.45

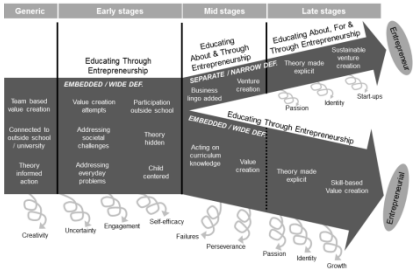
- What use of a measeurement tool do you see?

Three supporting models and a platform

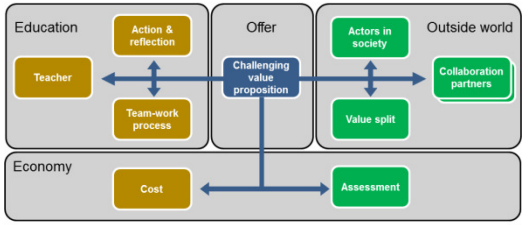
- An action-based instructional model inspired by Vygotsky



- A progression model for education from ABC to PhD



- A value creation model for interacting with outside world



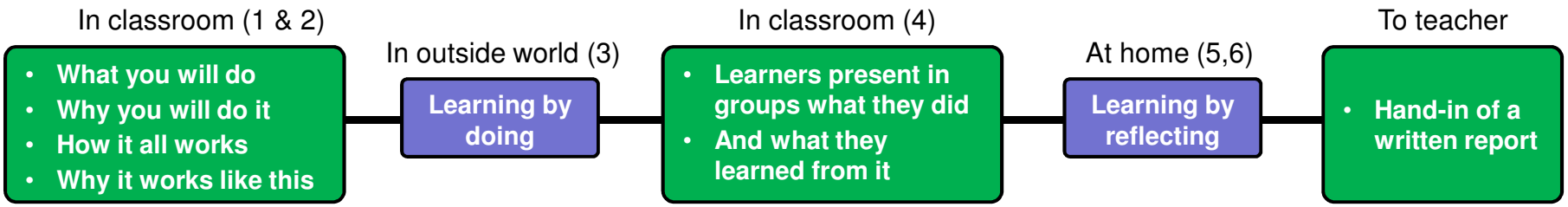
- A pedagogical platform for value creation

DRIVHUSET
I SAMARBETE MED CHALMERS SCHOOL OF ENTREPRENEURSHIP

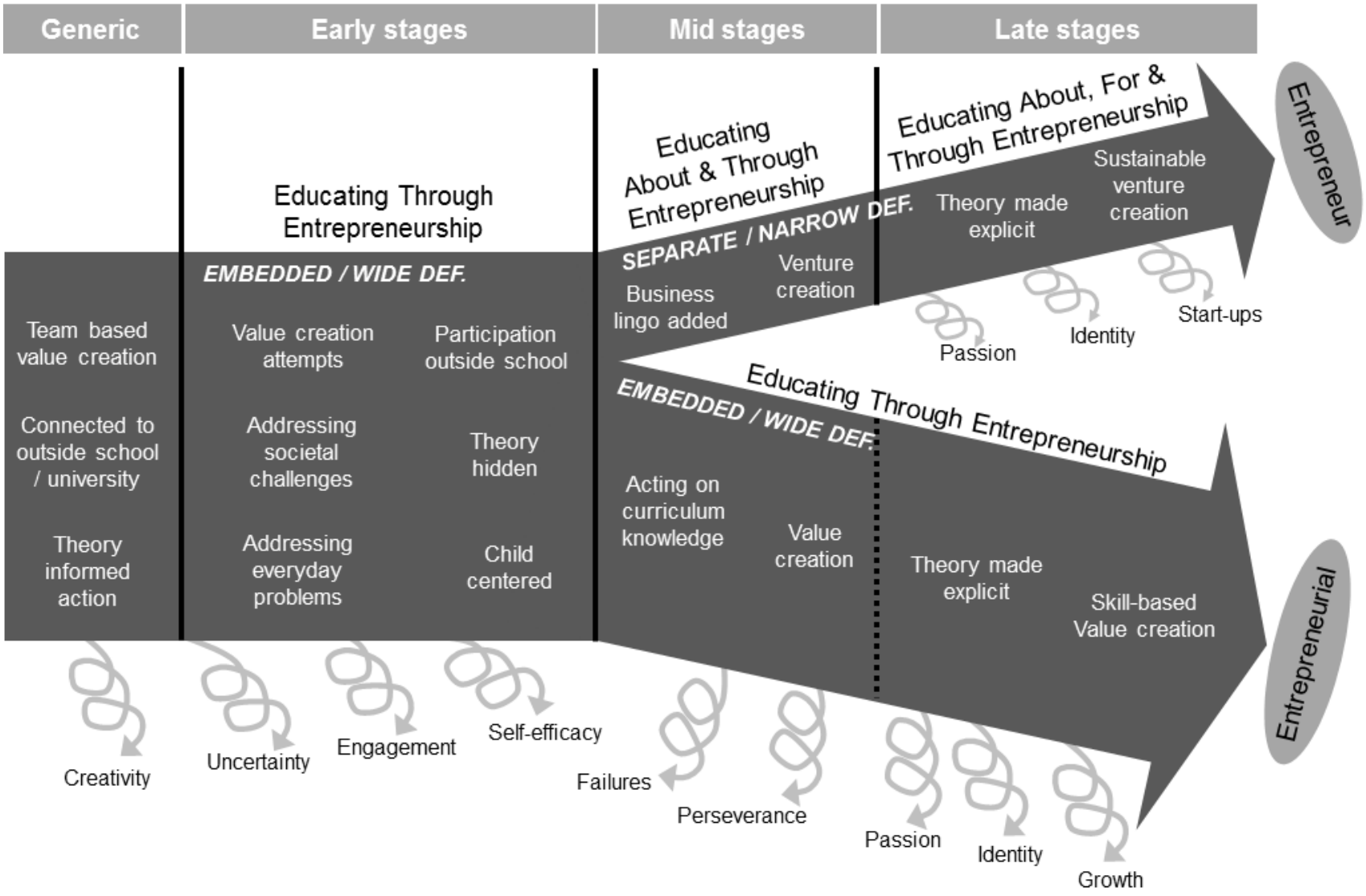
An action-based instructional model

Development from Vygotsky by Piotr Galperin and his team

1. Motivational stage – actions to be learned are introduced and connected to relevant goals
2. Orienting stage – a "cheat schema" outlining a complete framework for actions to be learned
3. Material stage – learning by taking action in actual practice or through simulation
4. Overt speech stage – Transferring actions taken into oral speech
   - Linking action with thought and facilitating theorizing / generalizing in a social setting of "communicated thinking"
5. Covert speech stage – Inner dialog reflecting on previous stages by speaking "in the head"
6. Mental stage – The action has been transformed into a (subconscious) thought "scheme"
   - A cognitive tool being "kept in mind"

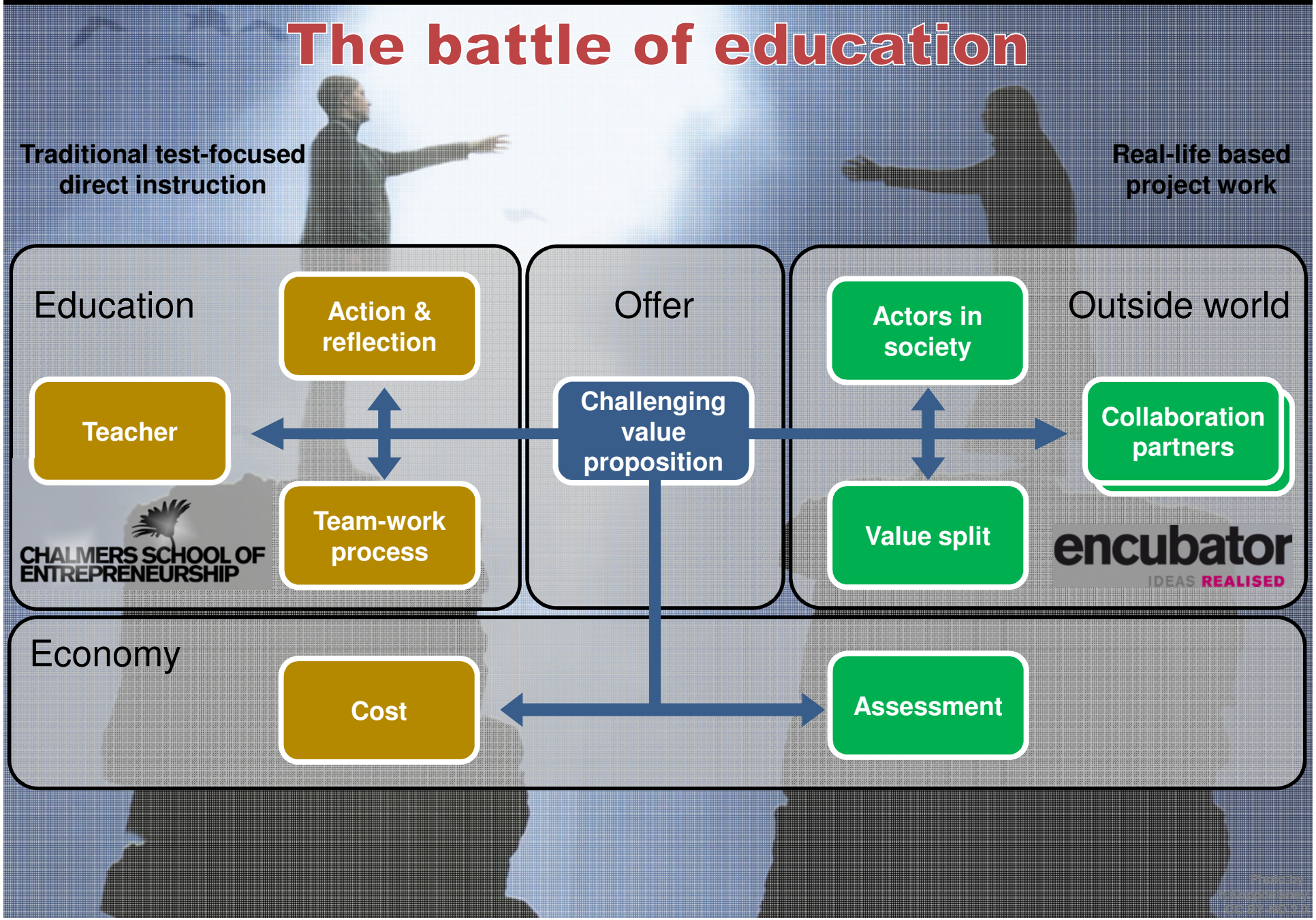


A progression model for education

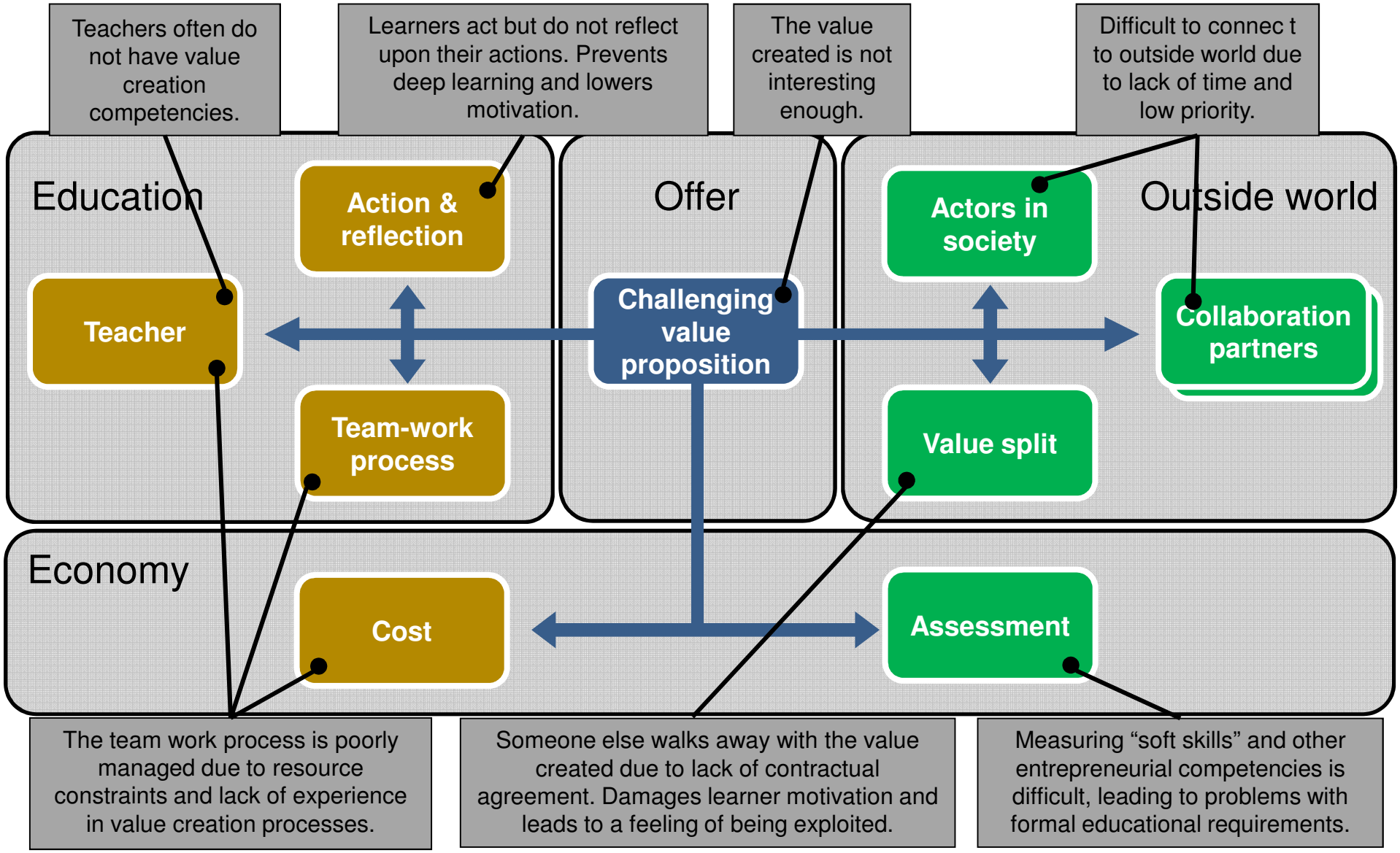


CHALMERS SCHOOL OF ENTREPRENEURSHIP

The battle of education



Some challenges



A PLATFORM: DRIVHUSET PROCESS

WHAT:

- Action-based teaching platform for becoming more entrepreneurial, based on modern theory and literature
- Co-developed by Drivhuset and Chalmers for 3 years, co-owned
- Delivered around Sweden by 55 employees at Drivhuset's 14 offices, quality assurance performed yearly by Chalmers
- Customers include: universities, schools, unemployment bureaus, municipalities, corporations

HOW:

- Contains 5 workshops with tutoring material and example library – idea, customer, proposition, value, position
- Built on frameworks such as "Business Model Canvas" (BMC), "NABC", "SPIN", "Effectuation", "Customer development" etc
- Core is pitching an idea to people in "real life" , developing hypotheses into facts.
- IT platform with BMC tools, videos, diagnostic tests etc

DRIVHUSET

I SAMARBETE MED CHALMERS SCHOOL OF ENTREPRENEURSHIP

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Afternoon 15.00-15.45

- What use of a measeurement tool do you see?

1. The opportunity map

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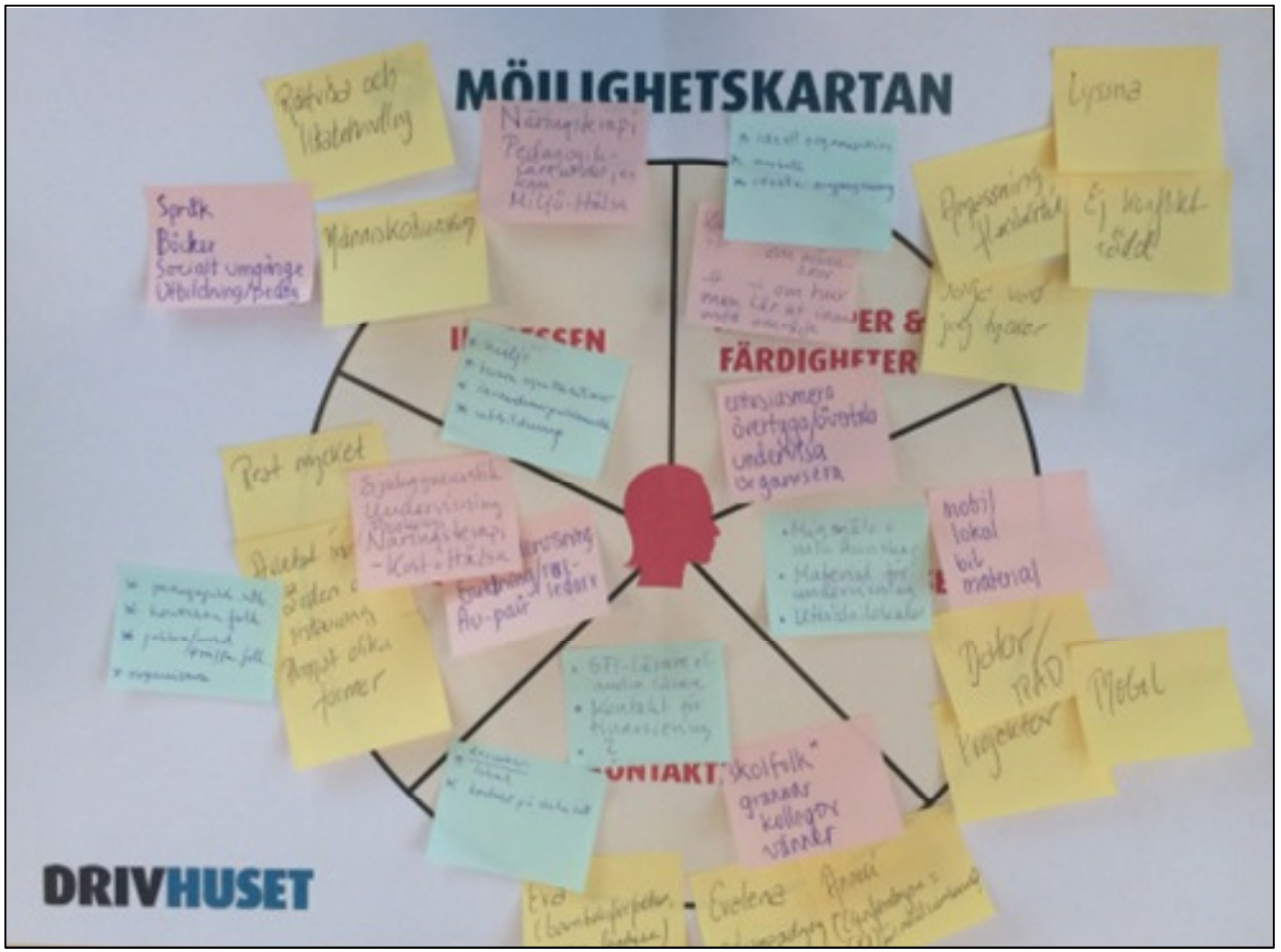
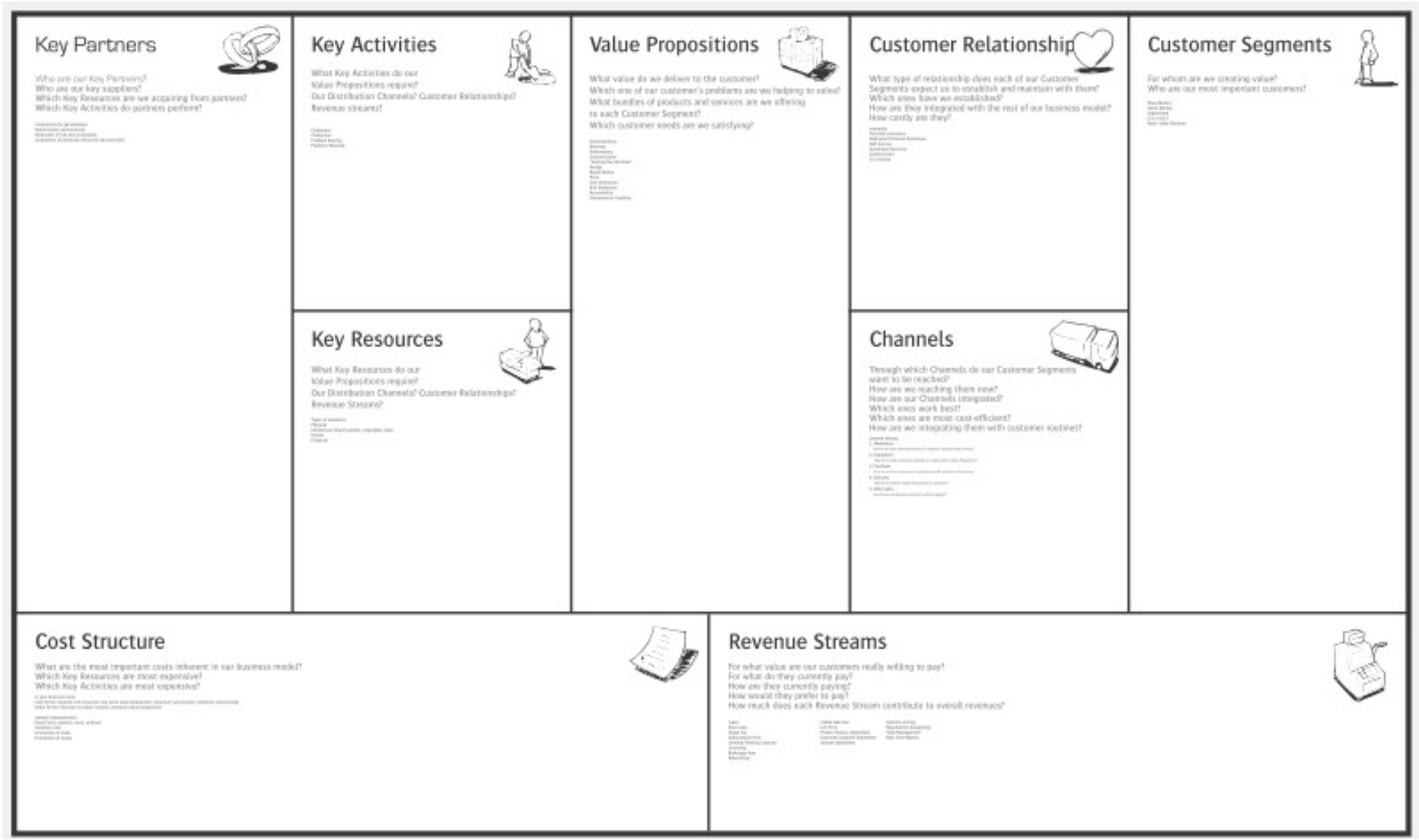
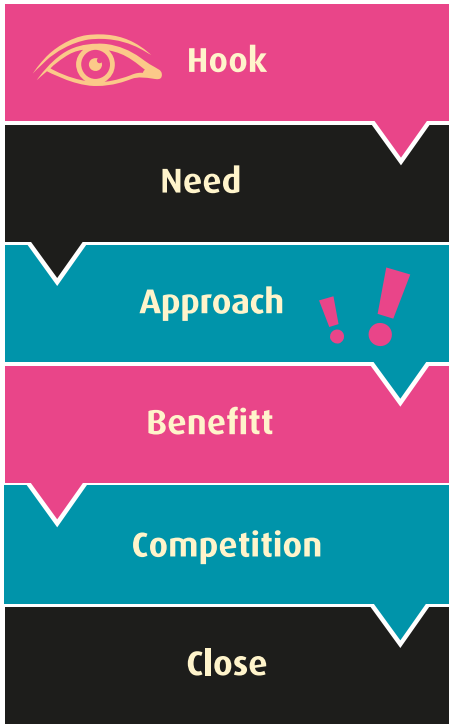


2. Describe your idea



3. Prepare your pitch



- Capture interest
- Questions, examples, metaphors, humor
- Need/Problem
- Consequence of need/problem
- Consequence of todays solution
- Our solution, Value Proposition
- Customers benefitt
- Value of our offer/benefitt
- Our offer relative to competition and the market
- A clear offer
- What do you want to happen after your pitch?

Carlson & Wilmot, Innovation, The five disciplines for creating what customers want, p. 132-137

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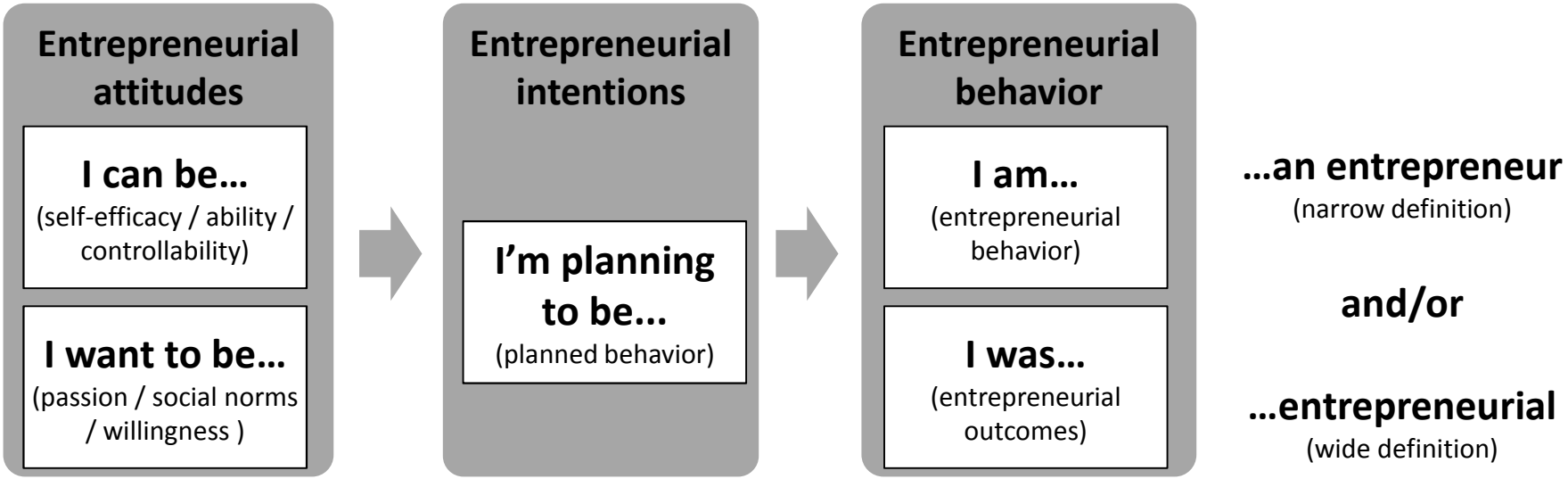
Common methods for assessment

Measurement strategy	Before education	During education	Directly after education	Long time after education
Thoughts	Entrepreneurial knowledge, skills and attitudes	-	Entrepreneurial knowledge, skills and attitudes	-
Actions	-	-	-	Actual entrepreneurial behavior
Emotions	-	-	-	-

Theory of Planned Behavior:



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Actions	-	-	-	Actual entrepreneurial behavior
Emotions	-	-	-	-

- Problems with thought based strategies
  - Easy to use, but convincing and useful results are scarce
  - Taken from natural sciences toolbox, but don't work well on meaning-laden social science issues
  - Only tells us if learning outcomes are reached, don't answer questions such as how, when and why
  - High risk for self-selection bias of entrepreneurial people choosing entrepreneurial education
- Problems with action based strategies
  - Difficult to prove that the observed entrepreneurial behavior is caused by the educational intervention
  - Expensive and difficult to track people for many years or even decades
  - Long time spans make it difficult to establish robust causal relations
  - High risk for self-selection bias of entrepreneurial people choosing entrepreneurial education

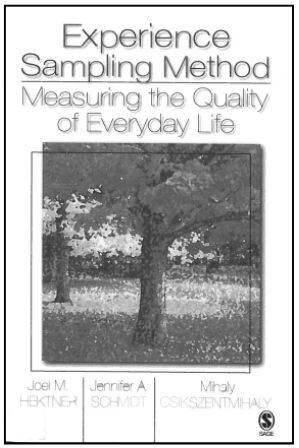
The focus of my research

Measurement strategy	Before education	During education	Directly after education	Long time after education
Thoughts	Entrepreneurial knowledge, skills and attitudes	**What do they think?**	Entrepreneurial knowledge, skills and attitudes	-
Actions	-	**What do they do?**	-	Actual entrepreneurial behavior
Emotions	-	**What do they feel?**	-	-

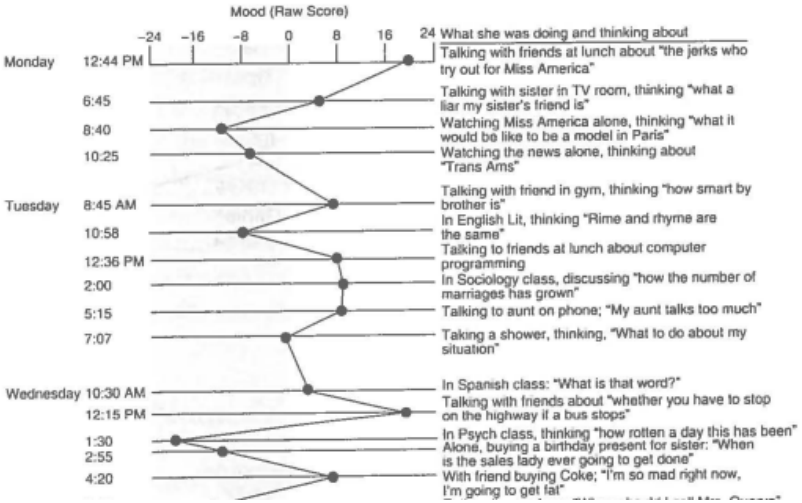
- Based on tracking critical and emotional events triggering learning (i.e. links)
- Captures the learners' experiences, i.e. formative assessment, leans on experience sampling
- Focus is on what happens during the educational intervention, not before / after / long after

Experience Sampling Method (ESM)

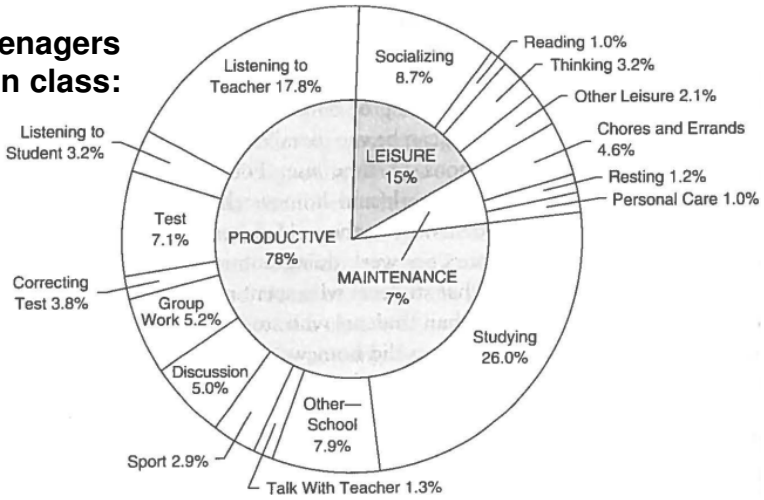
- Very short surveys answered in the actual situation / environment
  - Captues the subjective experience with high validity and reliability
  - A mix between diary and survey
  - Can be done through the mobile smartphones that most people have today
- Has been adjusted to the purpose of capturing learning
  - The learner decides when to report something significant
  - Leans on people's inclination to share strong emotions socially
  - Anchored in Vygotsky's view of learning that human activity spurs learning



The week of a teenager:



What teenagers do in class:



A mobile app captures learners' emotional experiences / events

Interviews transcribed, coded in NVIVO, link frequency counted

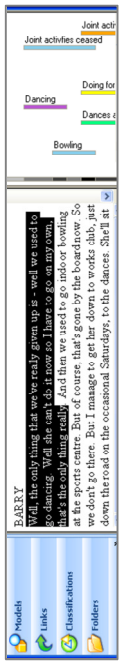
"Experience sampling"

Interviews follow up these events, connects them to learning outcomes

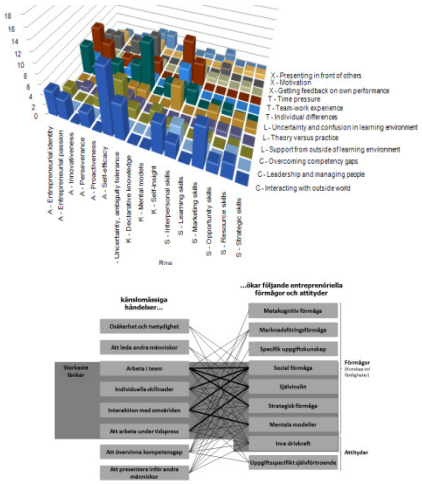
Analysis of when / why / how competencies are developed

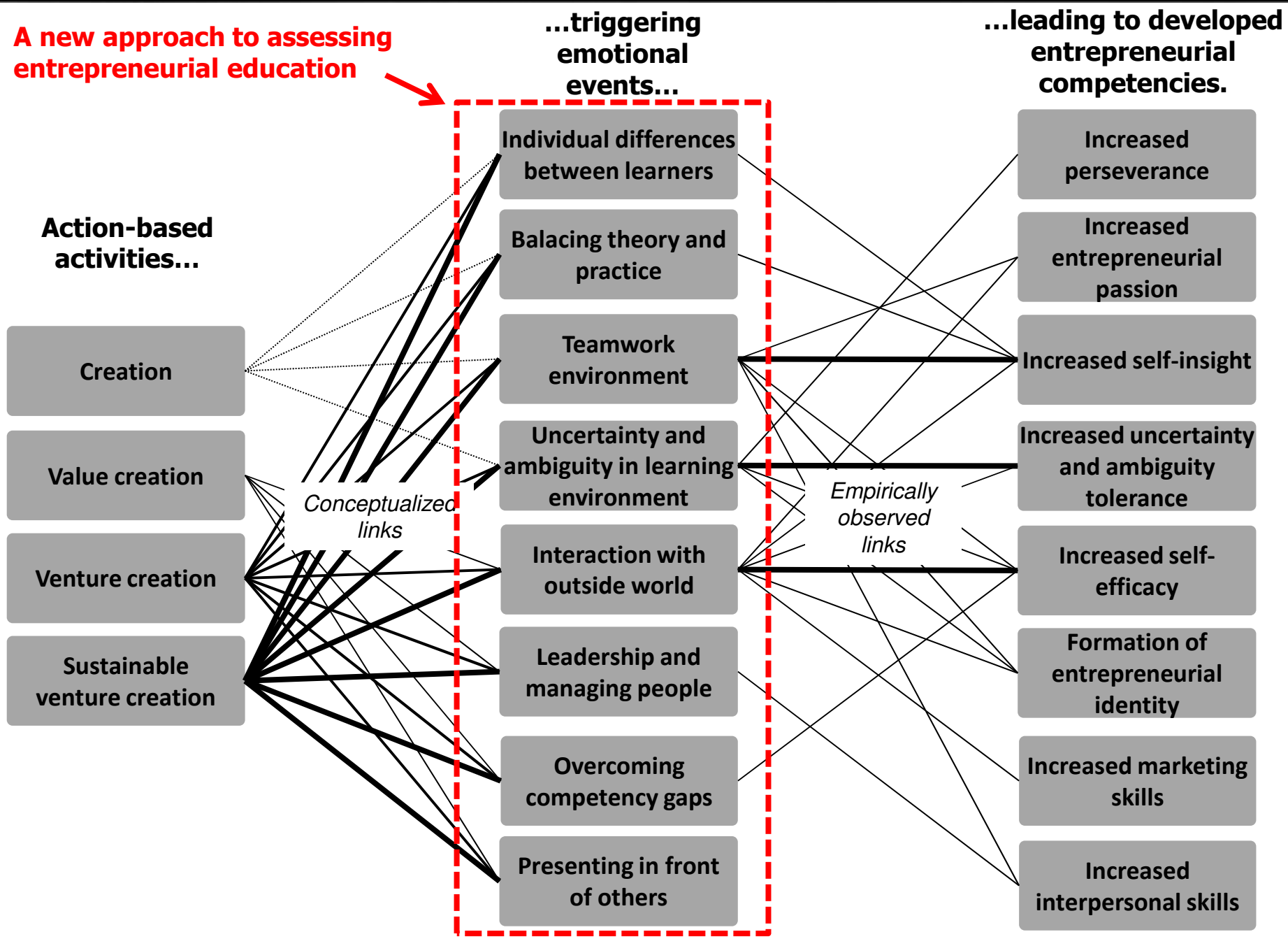
Månad 1 | Månad 2 | Månad 3 | Månad 4 | Månad 5

- What happened?
- Why?
- What did you learn?
- What insights do you take with you?



Entrepreneurial competency	# of occurrences
Interpersonal skills	79
Self-insight	66
Mental models	53
Strategic skills	49
Proactiveness	46
Marketing skills	45
Self-efficacy	30
Learning skills	25
Innovativeness	21
Perseverance	19
Uncertainty, ambiguity tolerance	17
Declarative knowledge	15
Resource skills	10
Entrepreneurial identity	7
Entrepreneurial passion	5
Opportunity skills	4




A new approach to assessing entrepreneurial education
Action-based activities...
...triggering emotional events...
...leading to developed entrepreneurial competencies.
Creation
Value creation
Venture creation
Sustainable venture creation
Conceptualized links
Individual differences between learners
Balacing theory and practice
Teamwork environment
Uncertainty and ambiguity in learning environment
Interaction with outside world
Leadership and managing people
Overcoming competency gaps
Presenting in front of others
Empirically observed links
Increased perseverance
Increased entrepreneurial passion
Increased self-insight
Increased uncertainty and ambiguity tolerance
Increased self-efficacy
Formation of entrepreneurial identity
Increased marketing skills
Increased interpersonal skills

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An example from Chalmers

University students

When students do real stuff…

"We started kind of three months ago but now we suddenly have 9 people working for us and like okay where did they come from? What happened there?"

…it causes strong emotions…

"The last 3 weeks have been really crazy … there was kind of a crisis in my head and there was crisis in my stomach".

"It wasn't a roller-coaster, it was free falling from an airplane"

… that catalyze deep learning.

"I guess it is the blend between the people you meet and the success stories you hear and things you do in the project … you get confirmation that - hell, we could probably do this."

↳ **ENTREPRENEURIAL SELF-EFFICACY**

"It has built a little peace of mind that okay, it might be as stressful or as messy as anything, but it always turns out with something."

↳ **UNCERTAINTY & AMBIGUITY TOLERANCE**

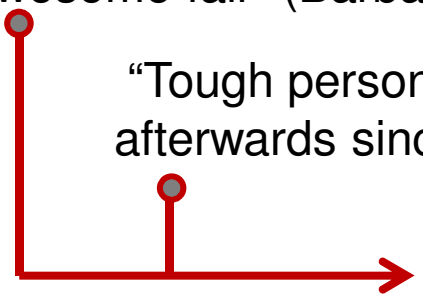
Findings – app reports

Table 3. Number of app reports done by each student in the study.

Student (anonymized)	Idea origin	# of app reports	# of emotions reported	# of CLEs reported
Anthony	Individual inventor	7	4	3
Barbara	University research	16	12	4
Carol	University research	32	23	9
Total		**55**	**39**	**16**

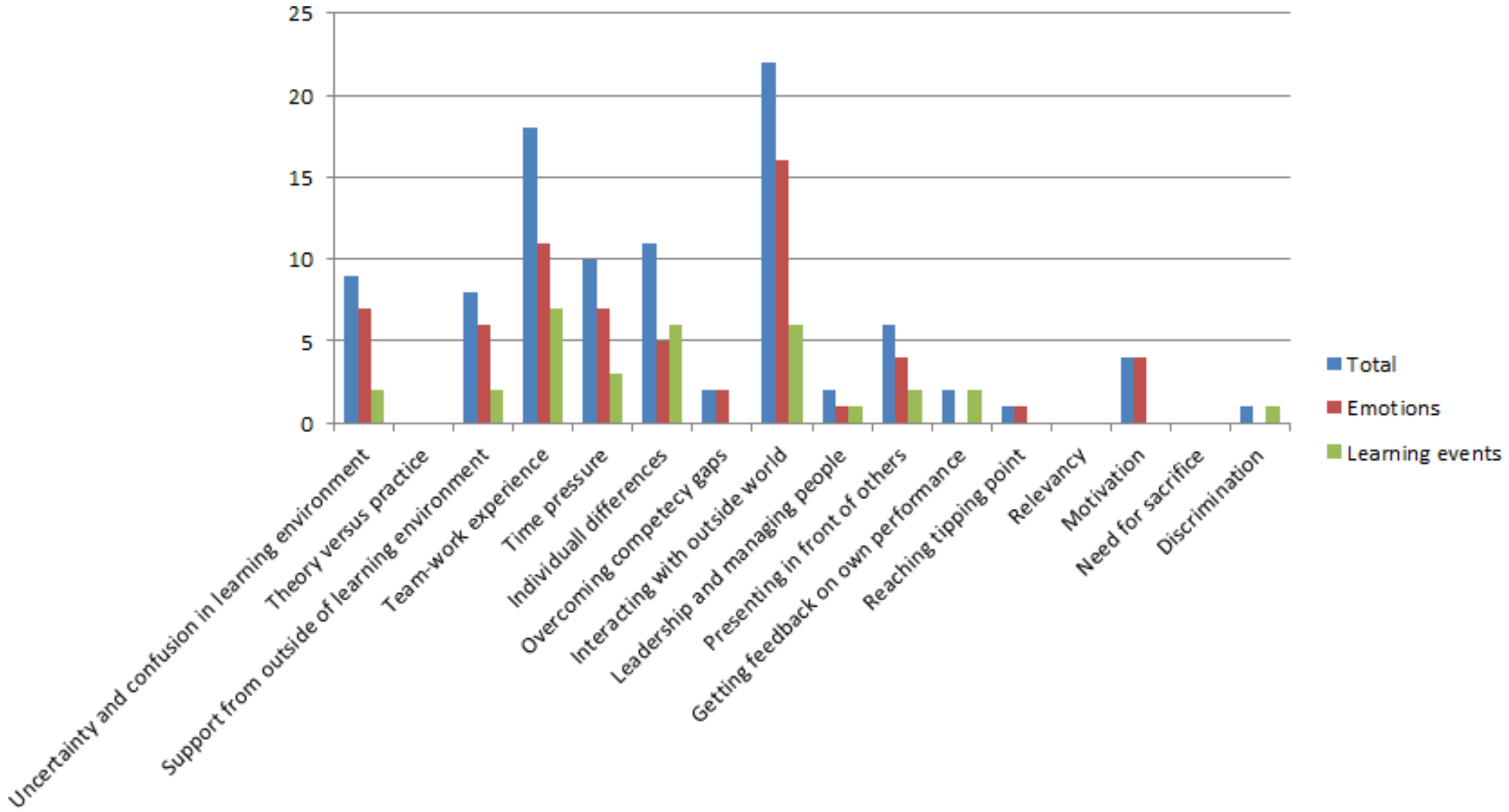
"Excited!!! We handed in our business model and we hired a guy to develop our prototype and we are applying for money to go to this awesome fair" (Barbara)

"Tough personal insight made me say I am sorry to my team. Felt great afterwards since they responded very well." (Carol)



App reports feed into interviews triggering discussion

Coded app reports



Findings

Most common sources of emotions

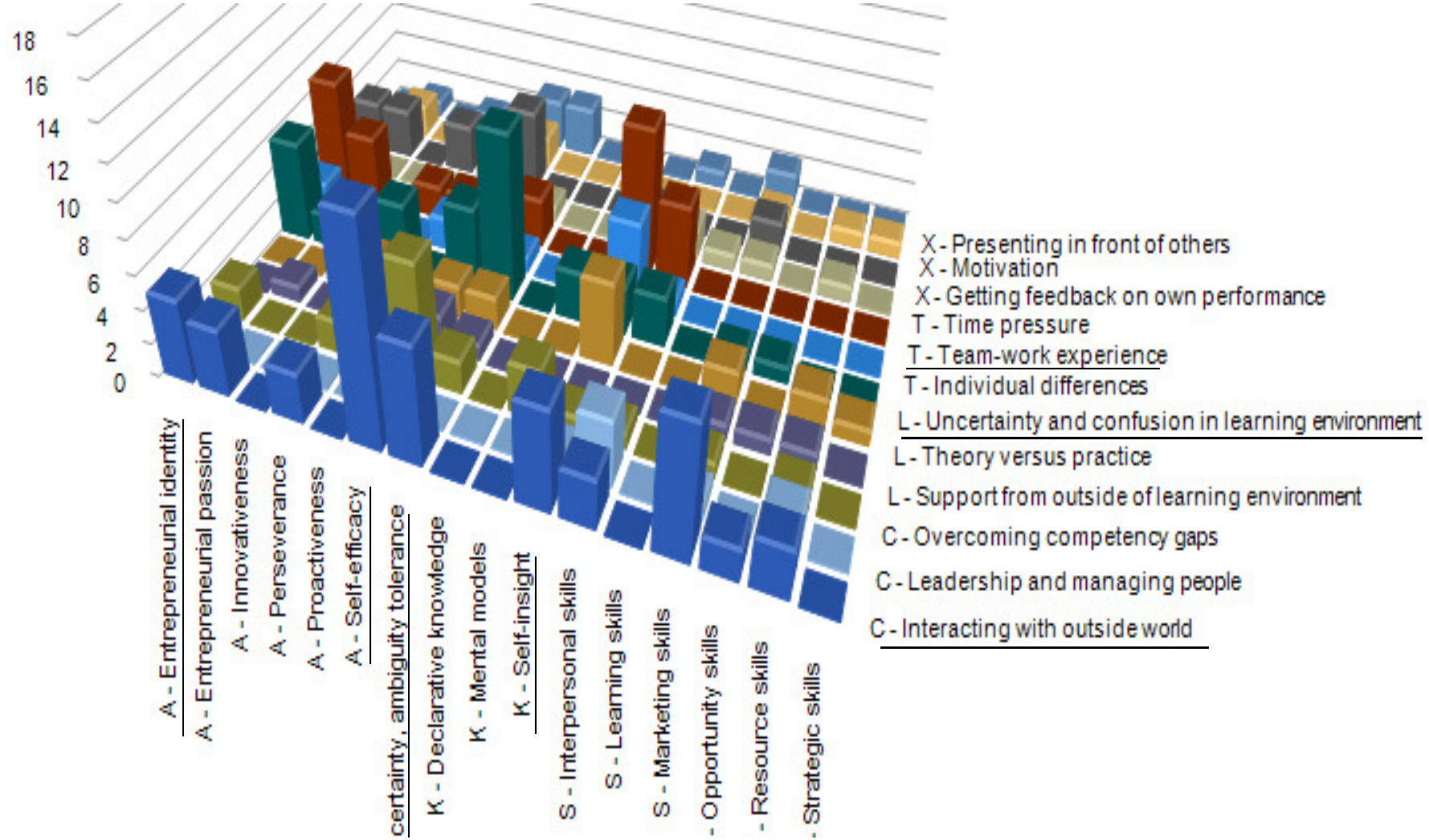
Codes			Total number of occurences
Main theme	**Kind of codes**	**Sub theme (theoretical codes)**	
Sources of emotions	Theoretical codes	Interaction with outside world	29
		Team-work experience	26
		Uncertainty and confusion in learning environment	24
		Theory versus practice	15
		Individual difference	10
		Overcoming competency gaps	9
		Leadership and managing people	6
		Support from outside of learning environment	5
		Time pressure	5
	Open codes	Presenting in front of others	12
		Getting feedback on own performance	8
		Reaching tipping point	8
		Other	6
		Relevancy	6
		Motivation	5
		Need for sacrifice	5
		Discrimination issues	2

Findings

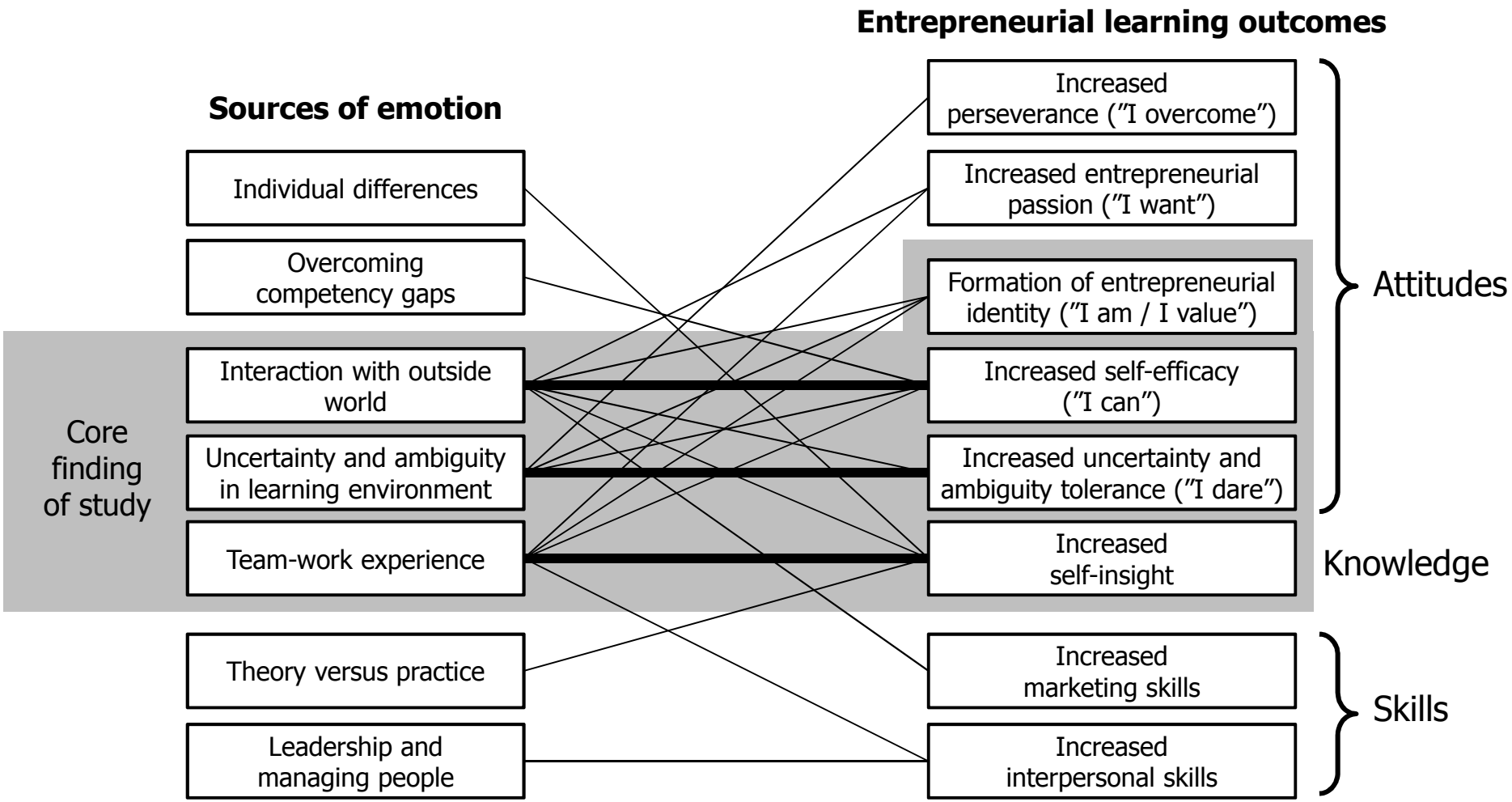
Most common developed entrepreneurial competencies

Codes			Total number of occurences
Main theme	**Kind of codes**	**Sub theme (theoretical codes)**	
Entrepreneurial learning outcomes	Theoretical codes	Self-efficacy	30
		Self-insight	20
		Entrepreneurial identity	20
		Uncertainty, ambiguity tolerance	16
		Marketing skills	12
		Entrepreneurial passion	12
		Perseverance	12
		Interpersonal skills	11
		Mental models	8
		Resource skills	8
		Declarative knowledge	3
		Opportunity skills	3
		Proactiveness	3
		Strategic skills	2
		Learning skills	1
		Innovativeness	-
	Open codes	Autonomy	6
		Self-esteem	4
		Other	2

Links between emotional events and learning outcomes



Findings - links



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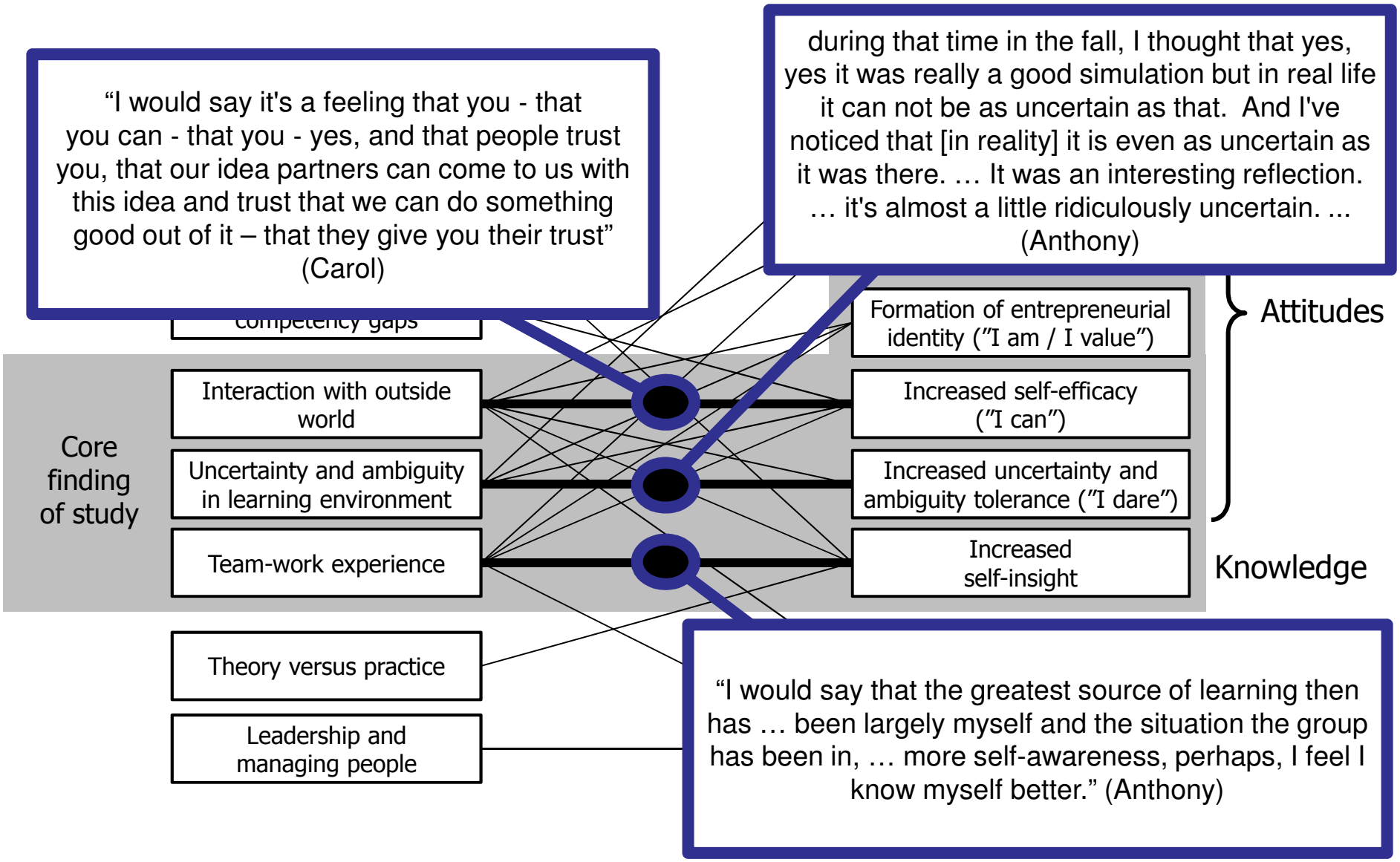
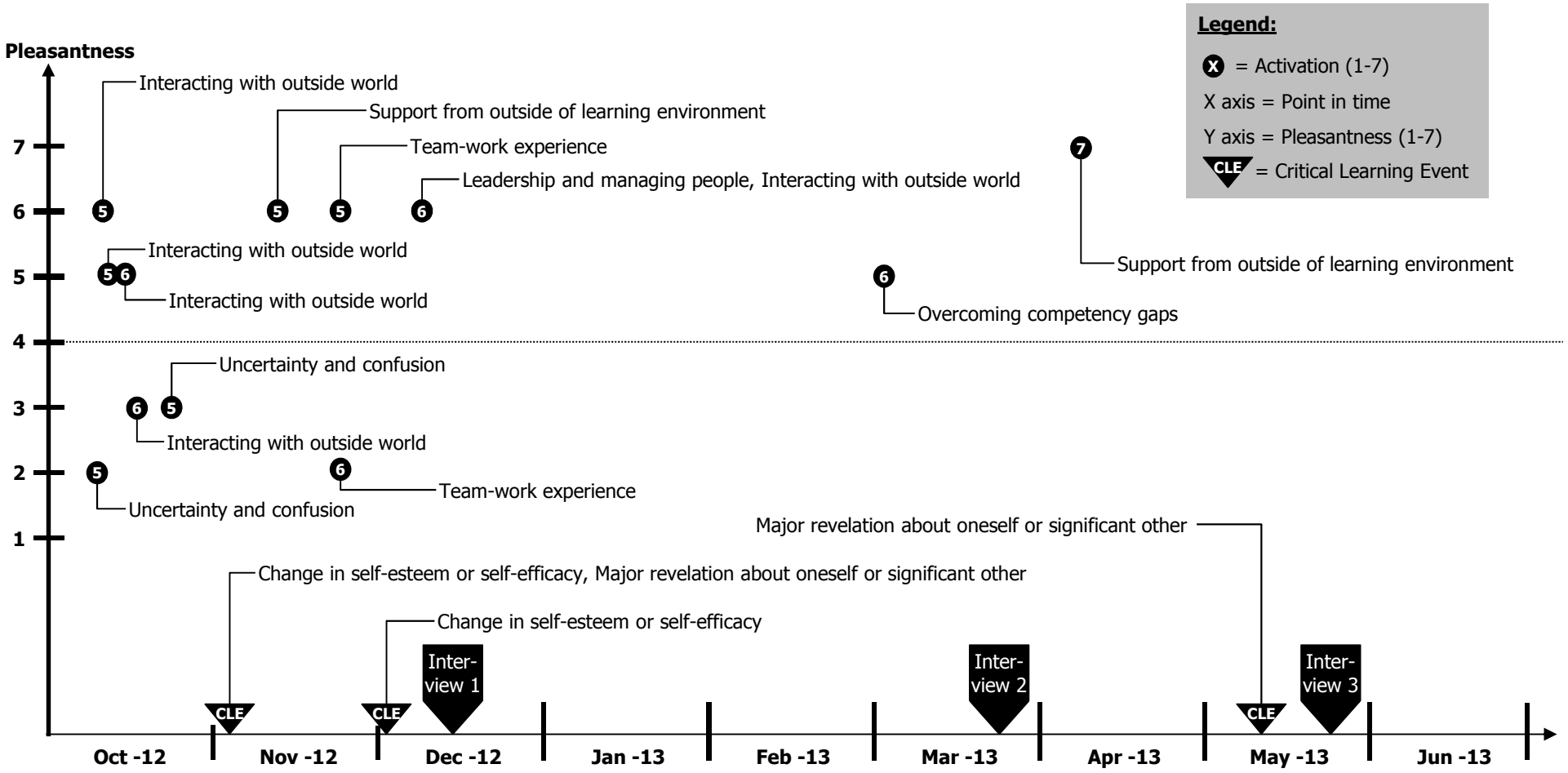


The journey of one respondent



* From article ” Links between Emotions and Learning Outcomes in Entrepreneurial Education”, Conference paper NFF, Reykjavik, Lackéus (2013)

Early glimpse into the ”black box” of entrepreneurial learning

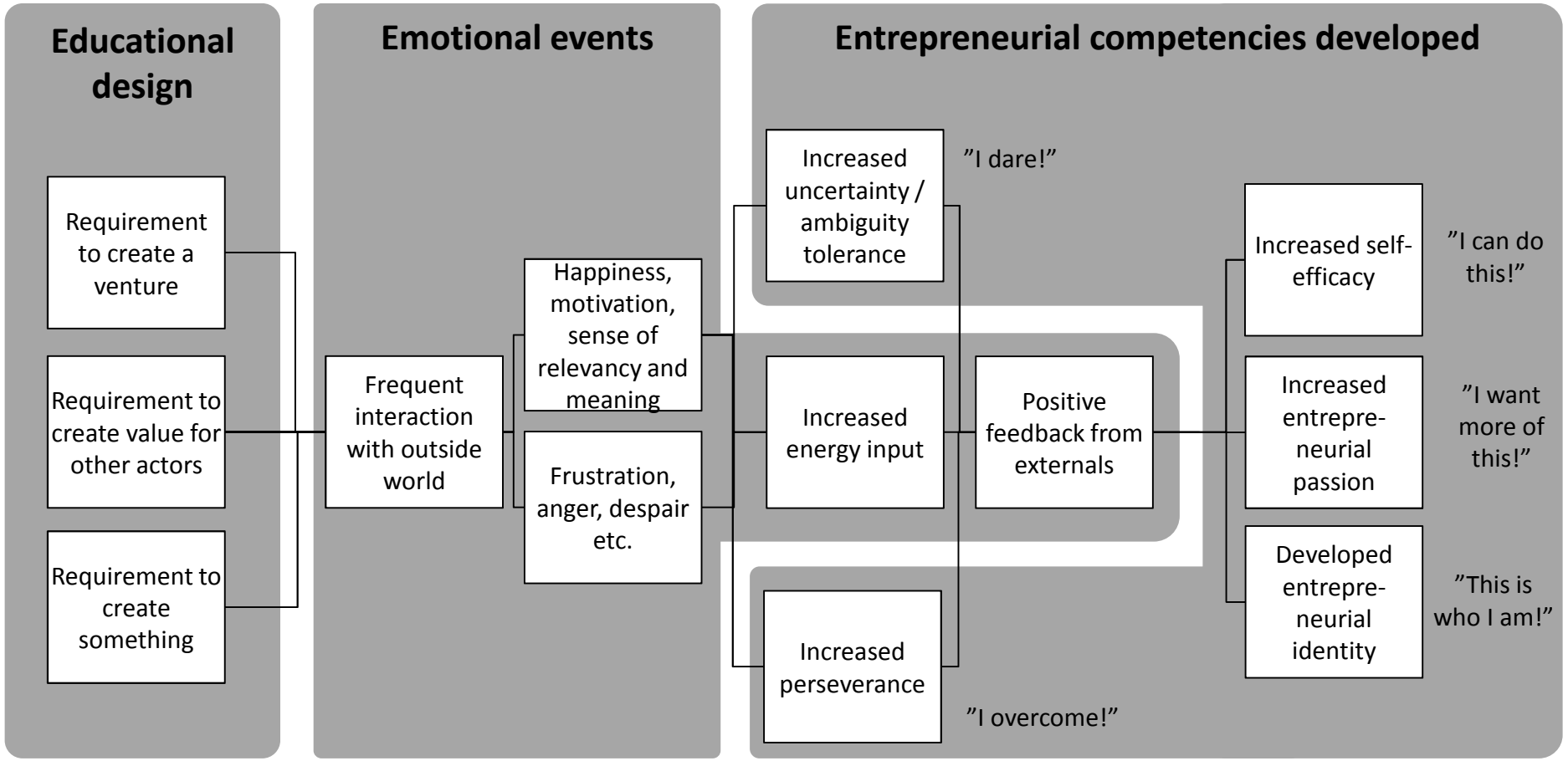


Figure 4. Early glimpse into the “black box” of entrepreneurial learning. A conceptual example of how educational design triggers emotional events which in turn develop entrepreneurial competencies.

Main conclusions for…

- …practice: Three design principles for entrepreneurial education
  - Promote interaction with outside world
  - Embrace uncertainty and ambiguity
  - Build on a strong team-work logic

- …research: Assessment of entrepreneurial competencies
  - The outlined methodology can be used to assess entrepreneurial competency development
  - This represents an interesting alternative to the abundant traditional quantitative randomized experimental pre/post control/treatment studies (Martin et al., 2012)

Today's agenda

Morning 9-10.30 and 10.30-11.00

- Two kinds of value creation
- What is ”entrepreneurial competencies”?
- Why are they seldom developed in education?
- How do we make people entrepreneurial?
- Some tools that seem to work
- Three supporting models and a platform

Morning 11.30-12.30

- Workshop – try some tools together

Afternoon 13.30-15.00

- Measuring entrepreneurial competencies
- An example: Chalmers and 23-yearolds
- Another example: Framtidsfrön and 13-yearolds
- The future of app based measurement
- The tool and its use

Afternoon 15.00-15.45

- What use of a measeurement tool do you see?

An example from primary school

Aim of study: Test an emotion based assessment strategy on pupils. Uncover effects of entrepreneurship in primary school.

Partners: FramtidsFrön (Carin Sävetun, research assistant)
Chalmers University (Martin Lackéus, supervisor)
Kungsbacka and Härryda municipalities

Environment: Pupils 13-14 years old in Kungsbacka and Härryda

Activity: ”RadioAktiv” – pupils that produce and broadcast live of a 30 min radio program. Cross-curricular approach.

Assessment: Mobile app reports and interviews during a period of 3 months. Transcription, thematic analysis and interpretation.

Financiers: BUSINESS REGION GÖTEBORG, VÄSTRA GÖTALANDSREGIONEN

Most common events leading to learning

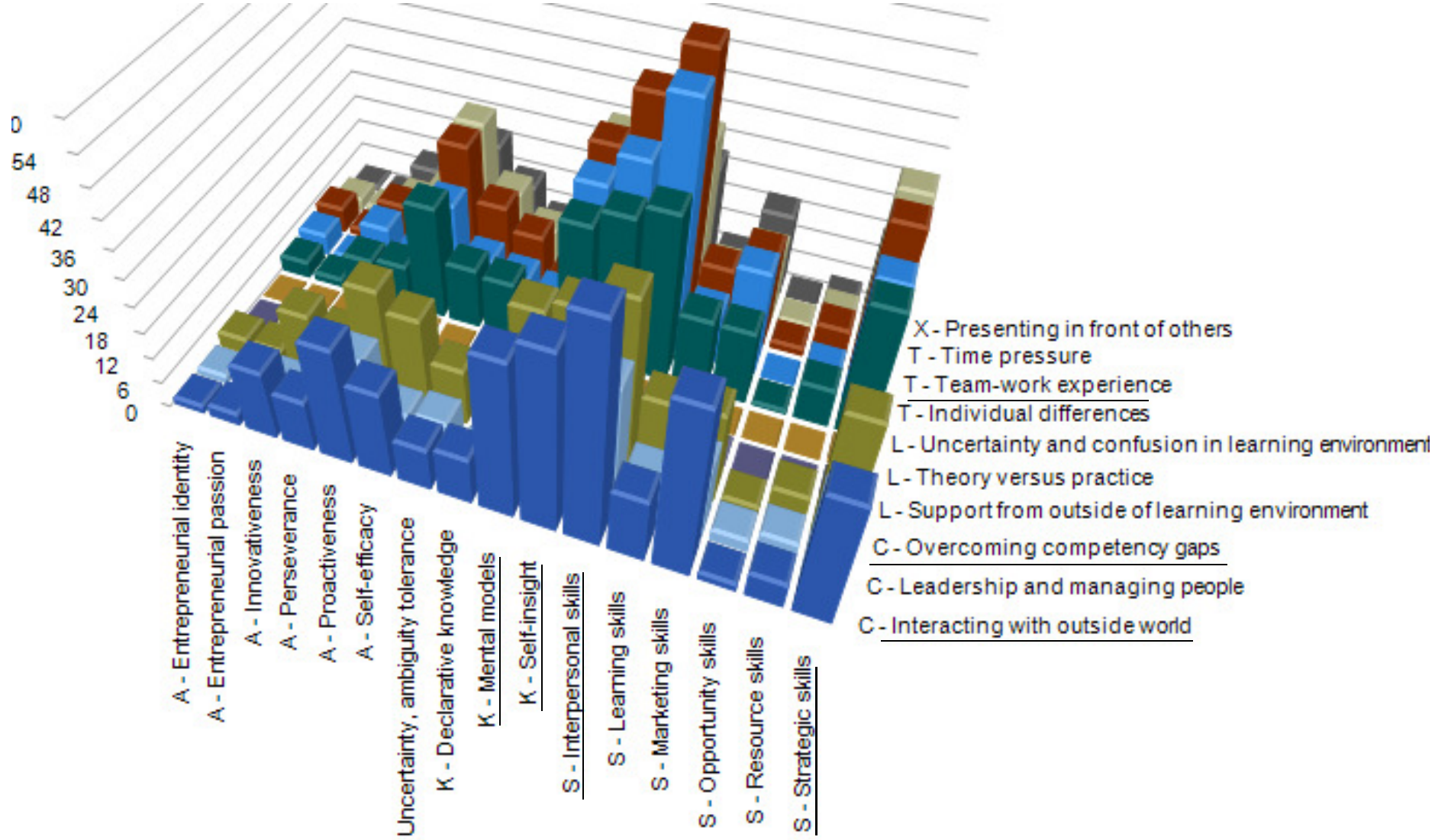
Emotional event	# of occurrences
Interaction with outside world	97
Team-work experience	84
Overcoming competency gaps	81
Time pressure	69
Individual difference	66
Uncertainty and confusion in learning environment	64
Presenting in front of others	46
Leadership and managing people	37
Experiencing motivation	19
Experiencing meaningfulness	14
Getting feedback on own performance	11
Att få bestämma själv, egenmakt	9
Support from outside of learning environment	6
Being seen as a mature person and a valuable resource	6
Theory versus practice	3
Experiencing need for sacrifice	1

Most common learning outcomes

Entrepreneurial competency	# of occurrences
Interpersonal skills	79
Self-insight	66
Mental models	53
Strategic skills	49
Proactiveness	46
Marketing skills	45
Self-efficacy	30
Learning skills	25
Innovativeness	21
Perseverance	19
Uncertainty, ambiguity tolerance	17
Declarative knowledge	15
Resource skills	10
Entrepreneurial identity	7
Entrepreneurial passion	5
Opportunity skills	4

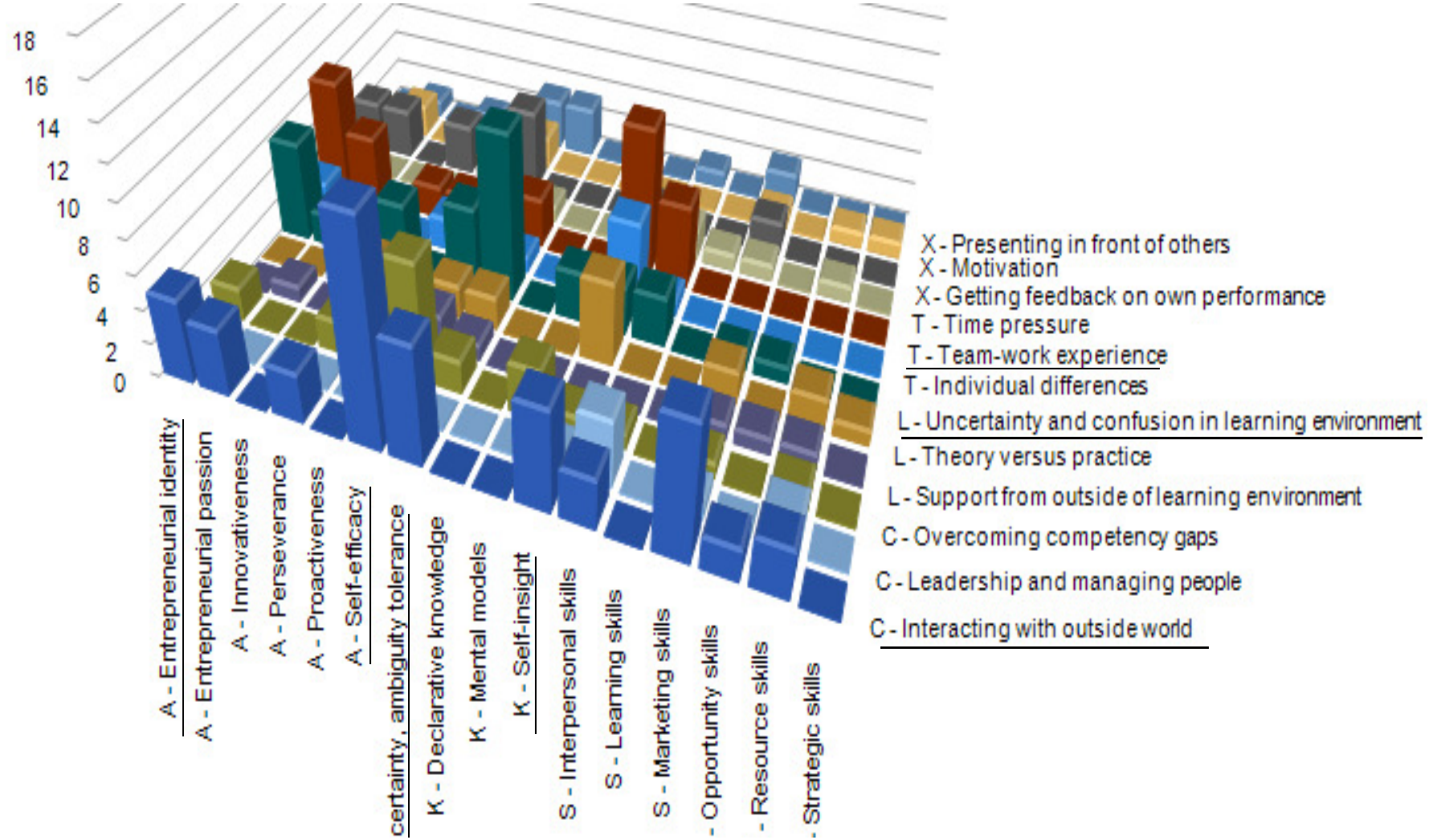
Links between emotional events and learning outcomes

- 13-14 year old pupils



Comparison with Chalmers Master program

23-24 year old students



Links between emotional events and learning outcomes

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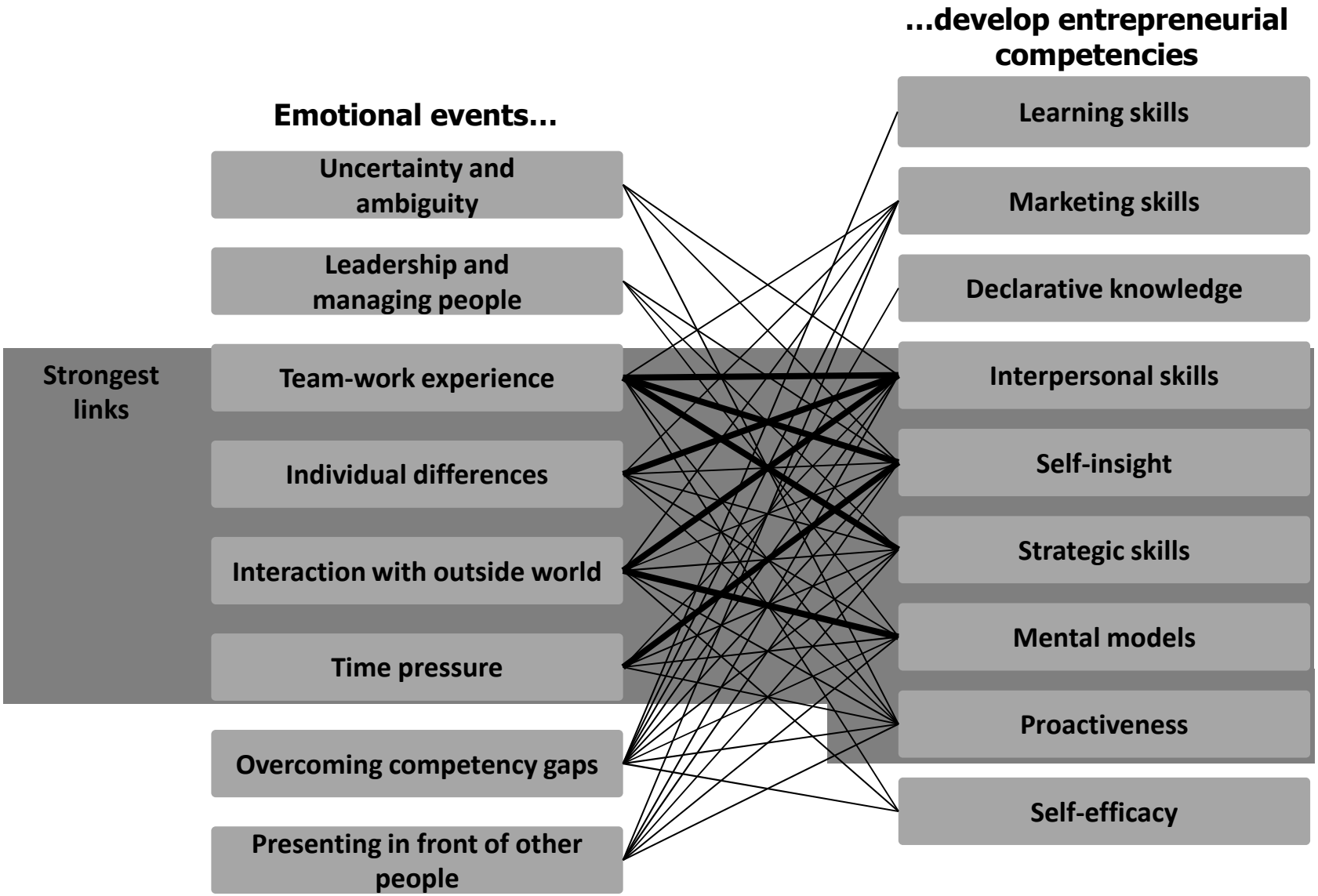
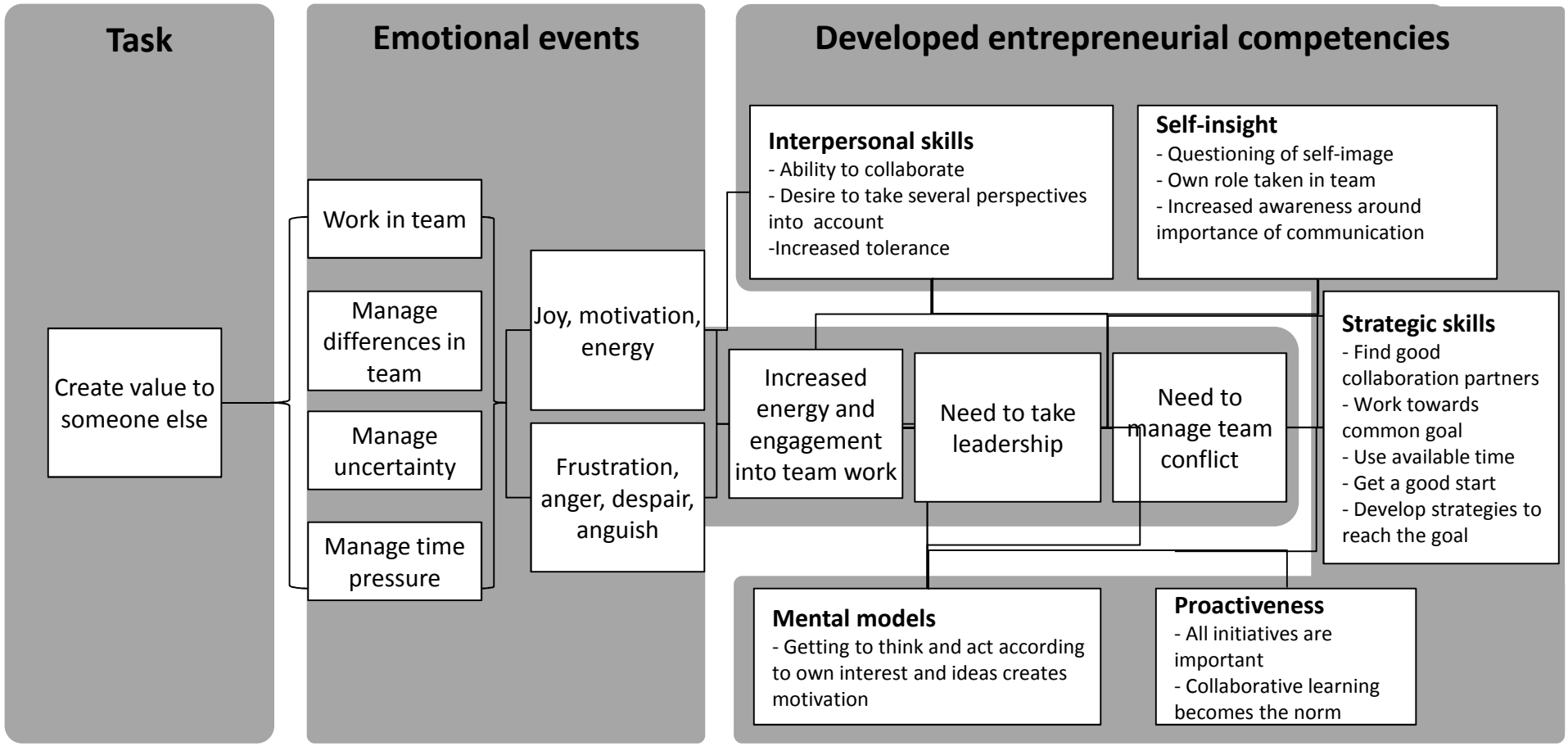


Summary of findings

- A number of themes emerged
  - Interaction with outside world much appreciated
  - Uncertainty was also appreciated
  - High degree of maturity in team work
  - Leadership challenges for the pupils
  - Taking responsibility
  - Being regarded as ”grown-up” / ”older” – being taken seriously
  - In total more appreciated than expected by pupils
- Nio hypoteser om hur insatsen kan förbättras genererades
  - Testades på eleverna – vissa fick enhällig accept, andra mer blandat mottagande
  - Även intervjuer med pedagoger och föräldrar ska nu göras som avslutning

A look inside the ”black box” of entrepreneurial learning



What interaction with outside world triggers

- **Questioning of self-image** – Gets a more varying number of opinions and ideas than in school
- **Daring to make their voices heard** – Increased knowledge and confidence about how the own voice sounds and how to express their opinion
- **A desire to create good meetings** - to sell radio advertising or do interviews motivates the pupils
- **Desire to bring in several opinions** - You want to be attractive to a wide audience of listeners
- **Working with adults creates maturity and confidence** - When pupils are taken seriously and seen as a resource by the outside world it triggers hope for the future
- **Creating value for others increases motivation** - Real recipients and the ability to influence many people gave a lot of energy
- **The importance of preparation** - Understanding of the foundations of journalism increased when the students realized a need to be flexible and prepared for the unexpected

Most common learning outcomes

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⁎	Entrepreneurial identity	7
⁎	Entrepreneurial passion	5
⁎	Opportunity skills	4

⁎ = Särskilt typiska entreprenöriella kompetenser

Want to learn more?

http://entreprenorskapsforum.se/wp-content/uploads/2013/08/PS_Entreprenorskapsutbildning_webb.pdf

http://www.kfsk.se/download/18.11165b2c13cf48416de861a/Entrepren%C3%B6riellt+l%C3%A4rande_Kfsk_2013.pdf

http://vcplist.com/wp-content/uploads/2013/11/Lackeus-Licentiate-Thesis-2013-Developing-Entrepreneurial-Competencies.pdf