

Activity-led learning and teaching methods that develop learners' potential through cooperative co-creative activities

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3rd International Conference on Quality in Teaching,
University of Applied Sciences Kiel, 7 May 2015

Outline

- Context for Activity-Led Learning (ALL) model
 - UK Higher Education context overview
 - Goals of Higher Education?
 - Current limitations of 'traditional' approaches?
- The ALL model
 - What is activity-led learning?
 - Why activity-led learning for self-organised learning?
 - An example in brief (from Coventry University)
- Underpinning research – cooperative learning
- The evidence – ALL in action
- Implications for teacher development

Context for ALL – UK Higher Education (HE)

Strong focus on quality in teaching and the student experience

Reflected in mission statements and strategic plans of UK universities

Context – an example

University of Worcester Strategic Plan 2013-2018

We aim to make a truly transformative contribution to the lives of our students, staff and the people of our region and to make a very positive impact in society more broadly

Mission

- To be an outstanding university at which to be a student
...and others

Strategic Plan and Mission 2013-2018

Context

Our courses and curricula will:

- Provide an education and experience that is outstanding in each field of study
- Allow our students to develop intellectually and personally
- Meet the diverse needs of students, employers and society in the 21st century
- Equip students to find graduate employment, gain professional advancement and/or start up new enterprises
- Enable students to undertake work related to their study, to develop their job seeking skills, to learn through community engagement and volunteering, and to recognise achievements through appropriate qualifications and award

Achieving the mission through courses and curricula (amongst others)

How is the quality of UK teaching measured?

Students rate the **overall quality** of their **course**

(National Student Survey (NSS) and internal student survey)

Qualification **completion rate**

(Higher Education Statistics Agency (HESA) return)

Leavers in graduate jobs

(Destination of Leavers in Higher Education - DLHE)



An important goal of HE?

- Employability – “a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy” (Yorke, 2004)
- **To develop 'budding professionals' with the capacities and willingness to tackle so-called 'wicked' problems***

***Wicked problems:** in a nutshell, problems for which there is no one right answer (Rittel and Webber, 1973)

Wicked problems

“Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them”

Laurence J. Peter, cited in Conklin, 2005.

Wicked problems

Conklin, 2005:

1. The problem is not understood until after formulation of a solution
2. Stakeholders have radically different world views and different frames for understanding the problem
3. Constraints and resources to solve the problem change over time
4. The problem is never solved [even though you've designed one solution] and.....

Any solution has unintended consequences that spawn new wicked problems

‘Wicked’ competences (based on Knight, 2007)

- Achievements that cannot be neatly pre-specified
- Take time to develop
- Resist measurement based approaches to assessment
- Take on different ‘shapes’ in different contexts
- Highly valued by employers

Examples of wicked competences

(based on Knight and Page 2007)

- Creativity
- Team-working and collaboration
- Communication
- Critical thinking
- Problem-solving
- Adaptability
- Working across subject boundaries – multi-, inter- and trans-disciplinary practices
- And others...

Wicked competences require self-organised learning

- Underpinning these wicked competences include independent (or self-organised) learning skills such as time management, information retrieval and evaluation, initiative and so on
- But they cannot be developed very effectively in isolation and even independently, although they often require independent reflection to consolidate. They also develop in response to need or opportunity so as educators create the situations where they are needed!

Self-organised learning – developed through need/opportunity

“People learn in response to need .When people can not see the need for what is being taught ,they ignore it, reject it, or fail to assimilate it in a meaningful way. Conversely, when they have a need, then *if the resources are available*, people learn effectively and quickly.”

Brown and Duguid (2002, p.136)

Student perspectives on self-organised learning



- STEM (Science, Technology, Engineering and Mathematics) graduates (who entered the workforce in 2007) identified 'development deficits' in their degree programmes in areas of key skills for employment (e.g. oral-presentation skills, time-management, teamwork, problem-solving and planning/designing experiments)

(Hanson and Overton, 2010a, 2010b)

University vs. Industry ?

University	Industry/research
Problems have an answer that is right or wrong	This often not the case
You can check the answer	You have to be confident in your solution
You are provided with all the information you need to answer a question	Projects are often information sparse
Problems have very little context	Projects are in very different contexts which affect the solutions needed
Getting an answer 'wrong' has no/little impact on anyone but yourself	Projects affect people, the environment...

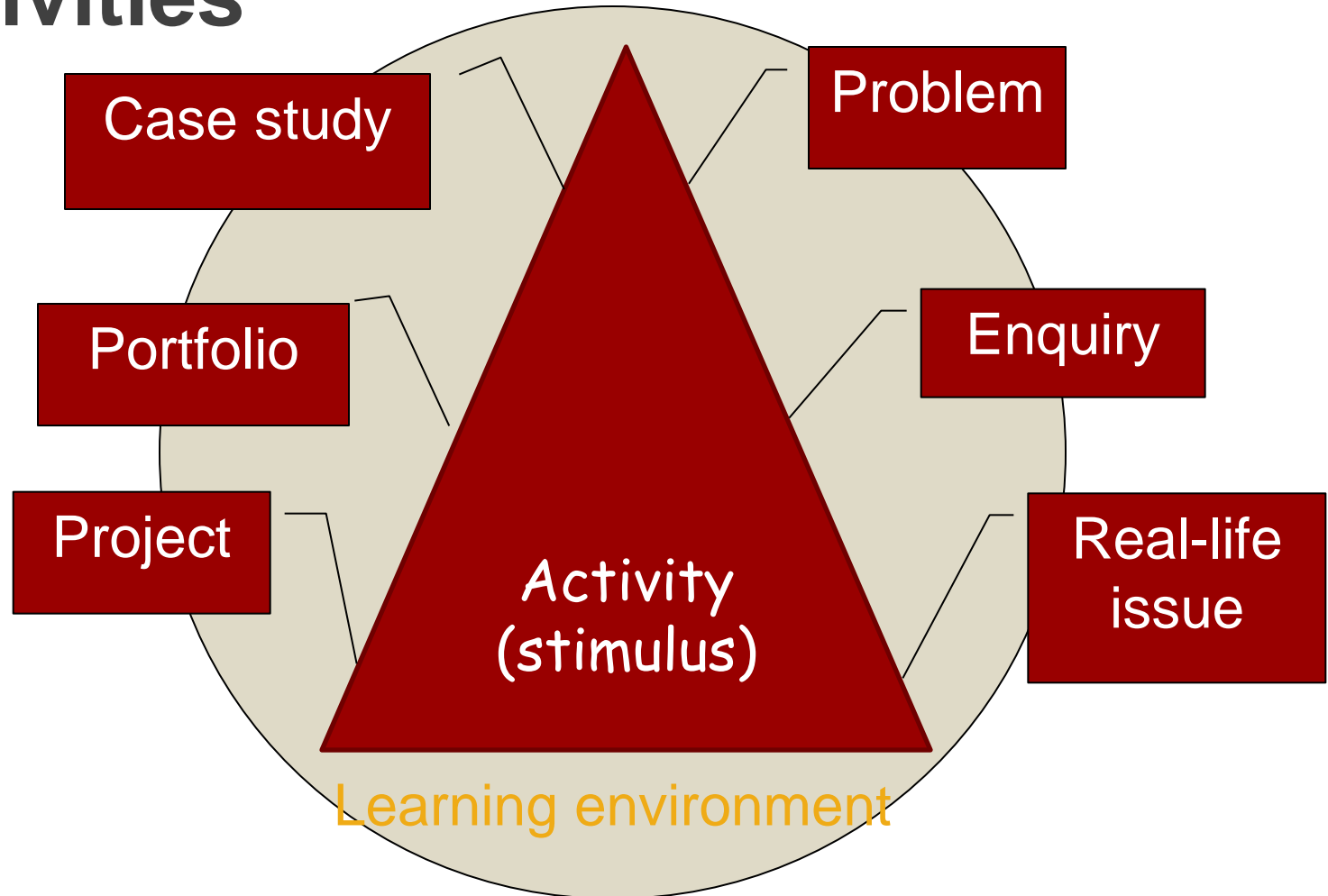
University vs. industry

University	A bridge	Industry/research
Problems have an answer that is right or wrong		This often not the case
You can check the answer		You have to be confident in your solution
You are provided with all the information you need to answer a question	Activity-led learning environment and curricula to stimulate self organised learning & 'wicked' competences	Projects are often information sparse
Problems have very little context		Projects are in very different contexts which affect the solutions needed
Getting an answer 'wrong' has little/no impact on anyone but yourself		Projects affect people, the environment....

Activity-Led Learning (ALL) model

- A pedagogy in which the activity is the focal point of the learning experience and the tutor acts as facilitator
- The stimulus for activity can be a problem, opportunity, case study, simulation, research question etc in a class-room, work-based, laboratory or other educational context
- ALL takes many forms and has a range of implementations within the various disciplines, but at its heart activity-led learning requires “a self-directed...process in which the individual learner, or team of learners, seek and apply **knowledge, skilful practices**,...and resources (**personal** and physical) relevant to the activity [being undertaken].” (Wilson-Medhurst et al, 2008, p.2)
- For any activity there are a range of possible solutions and responses (i.e. no one ‘right’ answer)
- Integrative

What is ALL: examples of activities



Activity-Led Learning

- It is an **outcomes** and action focussed pedagogy
- Learning is not simply about acquiring knowledge (of the subject being studied) i.e. '**knowing that**', but also about '**knowing how**' (Ryle, 1949) as well as being a social and moral practice
- Aims to support learning and development in all the domains of learning **cognitive** (knowing), **conative** (doing/acting) and **affective** (being) (Bloom 1956, 1964, Barnett and Coate, 2005)
- Emphasis on learning and growth, onus on teachers (facilitators)/others supporting learning, curriculum and environment to support that growth and provide for *continuity* (Dewey, 1938) particularly development judgement capacities

(Wilson-Medhurst, forthcoming; Igarashi et al, 2015)

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Background to ALL example

- Activity Led Learning implemented for Engineering, Mathematics and Computing undergraduates at Coventry University (approx 3600 students)
- Focus of this example Mechanical and Automotive Engineering (MAE) undergraduates – intake circa 85 students in 2008/9, 150 students in 2010/11, 130 in 2011/12 & 2012/13
- Motivation – improved student engagement and experience (amongst others)

Action for New MAE Students since Oct/Nov 2008

- Produce an intensive six-week introduction to the course using a rotation of six activities
- Base work on a core module (10 ECTS)
- Delay the start of all other teaching, (except Mathematics) to week seven
- Students work in their tutorial group (15/18 in each group) and then sub-groups typically of 2 or 3
- Aim to complete and pass a module at an early stage.

Initial evaluation (first year_(2008/9))

- Increased satisfaction with:
 - Self-confidence
 - Time management skills
 - 'How you are being taught'
 - And others

(Green and Wilson-Medhurst, 2009)

Skills and attributes developed (Wilson-Medhurst & Green, 2012)

Skill Activity	Professional outlook	Communication skills	Team-working capabilities	Exercise responsibility	Plan own work	Information retrieval & evaluation
Bridge design			X	X	X	
Metrology						X
CAD modelling				X	X	X
Materials testing				X	X	X
Marketing	X	X			X	X
Engine strip			X	X		X

Table 3: Activity that most effectively supports the 6 professional skills and attitudes that were a key focus of the 6-week ALL

Further examples

For a fuller discussion of other activity-led cooperative learning implementations see e.g. Wilson-Medhurst (forthcoming)*

*Wilson-Medhurst (forthcoming) *Student attainment through Activity-Led Cooperative Learning* in Steventon, G, Cureton, D., Clouder, L. (eds) *Student Attainment in Higher Education: Issues, controversies and debates*, Taylor and Francis

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Cooperative learning promotes self-organised learning

Activity-led learning utilises cooperative learning:

....activity-led learning requires “a self-directed...process in which the individual learner, or team of learners, seek and apply **knowledge**, **skilful practices**,...and resources (**personal** and physical) relevant to the activity [being undertaken].” (Wilson-Medhurst et al, 2008, p.2)

What cooperation is not...

- [show stretcher clip video]

Cooperative learning benefits

‘If you want to go quickly, go alone. If you want to go far, go together’

African proverb, cited by Djoghla, 2008 p.7

Cooperative learning - types

Cooperative learning situations can be divided into four main categories:

- **Formal**
- Informal
- Base groups
- Constructive controversy

(Johnson et al, 2013)

Setting up formal cooperative learning

There are key features of formal cooperative learning situations that the teacher sets up including:

- making pre-instructional decisions
- explaining the instructional task and cooperative structure
- monitoring students' learning and intervening to provide assistance as required
- assessing students' learning
- helping students process how well their groups functioned

(Johnson et al, 2013)

Designing cooperative learning

In order to be cooperative, and to reach the full potential of the group, *five* essential elements that need to be carefully structured into the situation:

- positive interdependence
- individual and group accountability
- promotive interaction
- appropriate use of social skills
- group processing

(Johnson and Johnson, 1989, 2005).

[If set-up well generate a 'sense of belonging']

Longitudinal evaluation first year implementations

Proxies for social integration ('belonging') and satisfaction used to monitor first year ALL implementations over three academic year cycles (2010/11, 2011/12 and 2012/13)

e.g. Proxy for belonging: 'I feel part of a learning community where I can learn from others'

e.g. Proxy for satisfaction: rate 'educational experience so far' (from poor to excellent)

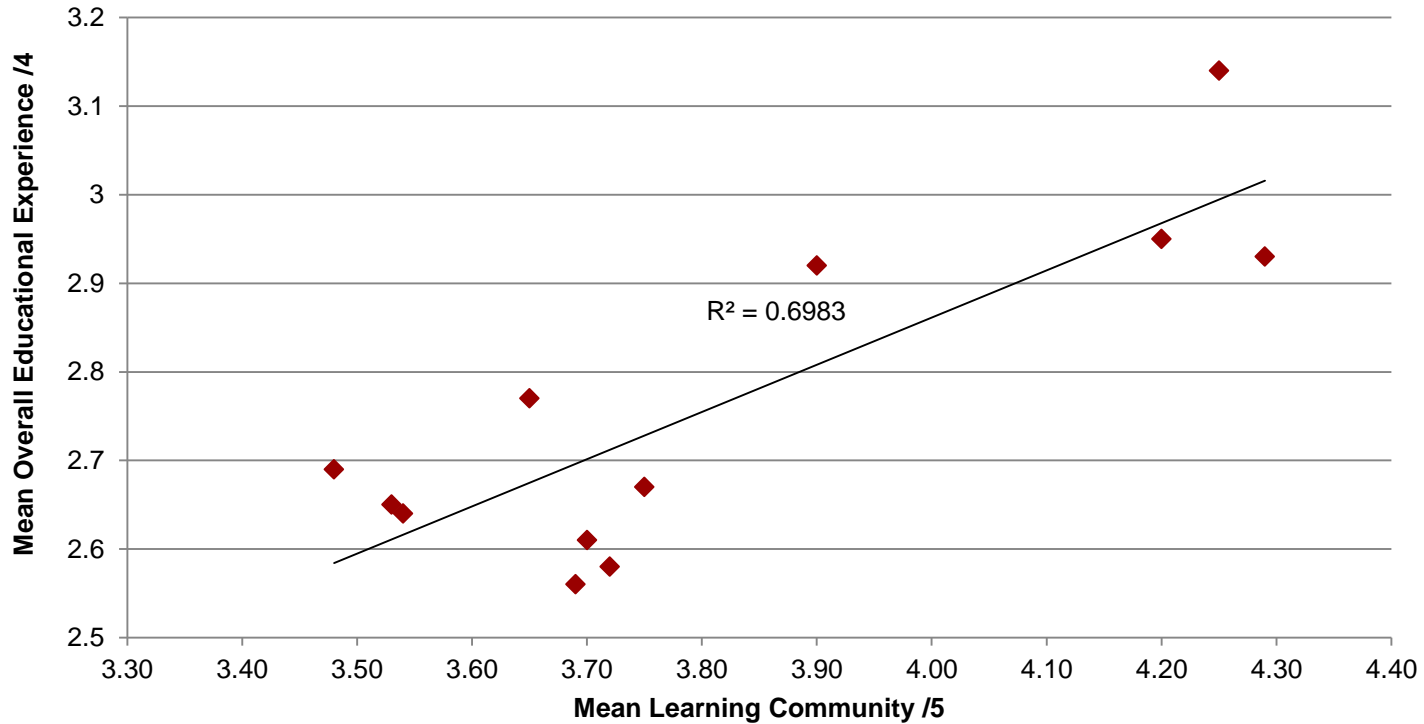
(Wilson-Medhurst, 2010; Wilson-Medhurst, forthcoming, Wilson-Medhurst, paper submitted for publication)

See Wilson-Medhurst (paper submitted for publication)

Cohort letter code	More use (%)	Recommend end (%)	No. Respondents	Cohort Size	Response Rate (%)	Mean Agree Learning Community (/5)	Mean importance learning community (/5)	Mean Agree Educational Experience (/4)	
A	79%	77%	114	155	74%	3.48	4.13	2.69	
B	77%	83%	49	90	54%	3.53	4.11	2.65	
C	69%	69%	79	95	83%	3.75	4.07	2.67	
D	59%	53%	79	115	69%	3.72	4.09	2.58	
E	81%	62%	38	55	69%	3.70	3.60	2.61	
F	85%	86%	23	48	48%	4.25	4.11	3.14	
G	54%	61%	63	80	79%	3.90	4.10	2.92	
H	83%	82%	58	80	73%	3.54	4.09	2.64	
I	71%	73%	114	150	76%	3.69	4.16	2.56	
J	83%	85%	113	150	75%	3.65	4.04	2.77	
K	84%	91%	100	120	83%	4.20	4.26	2.95	
L	96%	98%	56	70	80%	4.29	4.46	2.93	
		N =	886	1208	73%	0.29	0.19	0.18	STD DEV
						3.81	4.10	2.76	MEAN
						3.71	4.11	2.68	MEDIAN

See Wilson-Medhurst (paper submitted for publication)

Learning Community 2010/11



See Wilson-Medhurst (forthcoming)

Indicator/Essential element	Cohort Example 1 [F/F1]	Cohort Example 2 [L/J2]	Cohort Example 3 [A/B]
Educational experience (satisfaction) score (across the 3 years of 2010/11, 2011/12 and 2012/13)	Consistently above the mean and above SD	Consistently around the mean	Consistently below the mean and below SD
'Learning community' (belonging) score (across the 3 years of 2010/11, 2011/12 and 2012/13)	Consistently above the mean and above SD	Consistently around the mean except 10/11 when above mean and SD	Consistently below the mean and sometimes below SD
Cohort size (listed in chronological order from 2010/11 to 2012/13)	48; 45 (+80); 45 (+25)	70, 70 (+130); 35 (+130)	155 + 90; 230; 250

See Wilson-Medhurst, forthcoming

Indicator/Essential element	Cohort Example 1 [F/F1]	Cohort Example 2 [L/J2]	Cohort Example 3 [A/B]
Positive interdependence (illustrative student quotes)	“The work load was also manageable and we could compete with others [other teams]” √	“Don't be so open about it; a little more direction would be very beneficial” ×	“Give us detailed briefing before we do our work” ×
Individual & group accountability (illustrative student quotes)	“My team were mostly present, facilities awesome, independent problem solving, no right answer can be fun” √	“The involvement of every student” √	“It was more independent as a group or an individual” √
Promotive interaction (illustrative student quotes)	“Forced to work with others creating a structure for meeting new people and developing basic skills.” √	“Organising the application of my skill set to best serve the group” √	“The opportunity to learn from others and apply knowledge learnt so far” √
Appropriate use of social skills (illustrative student quotes)	“The chance to develop on team work skills” √	“Chance to communicate with others , share ideas” √	“Teamwork” √
Group processing (illustrative student quotes)	“More interference/guidance in the delegation of tasks within the group” ×	“it can be quite rushed” “smaller groups for more focused learning” ×	“give us more time to use and understand it” ×

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HE Teacher development

- Know about forms of cooperative learning and be able to implement them in the classroom (for self-organised and other learning benefits)
- Experience cooperative learning for themselves
- Include the above in teacher development programmes
- Recognition and reward for teaching

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