



NEUE LEHRE – NEUES LERNEN  
BOLOGNA.LAB



## **SESSION 1: WHAT IS RESEARCHED-BASED EDUCATION AND WHY IS IT IMPORTANT FOR HE DEVELOPMENT?**

Presentation for the *HERE seminar "Implementing Research Based Education"*  
*Venue: Rectorate of the University of Montenegro*  
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# The Importance of RBE

- *Employability: higher education for the 21st Century: graduate skills for the knowledge/information society (e.g. Healey/Jenkins, 2009)*
- *Teaching for quality: the shift from teaching to learning in Higher Education (e.g. Boyer, 1999)*
- *Strengthening our institutions: recruiting and retaining the next generation of research scientists (e.g. HRK, 2002; German Council of Science and Humanities, 2008)*

# Defining RBL 1: The staff side?

- *„**Research-oriented** teaching consists of different components, all of which are important: it has to be informed by research in the sense that (teaching staff) need to have been research-active in the areas they teach. It needs to be **research-led** and deal with issues currently in focus in research. (Finally) it has to use research as a means of instruction and involve students – according to their ability – in (actual) research projects.“* (transl. Pfeiffer, 2009: 1)

# Defining RBL 2: The student side?

- *„inquiry (...) or a **research-based** activity conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline and/or to understanding.“* (Brew & Jewell, 2012: 1 )

Or:

- *„**research-based learning** (...) seeks to bring students into situations in which they research something that is subjectively new to them and thus acquire new knowledge.“* (transl. Bönsch, 2000: 236)

# Defining RBL 3: Relation to Research

Ludwig Huber (2014) identifies 3 types of research-related teaching

- ***research-based teaching*** is built on acquainting students with the problems, questions and debates in current research
- ***research-oriented teaching*** leads students towards and prepares them for independent research. The focus here is on research design and the informed choice and application of methods.
- ***research-based LEARNING (Forschendes Lernen)*** finally applies when students work independently and pursue a project throughout *the entire research cycle*.

(transl. & adapted from Huber 2014)

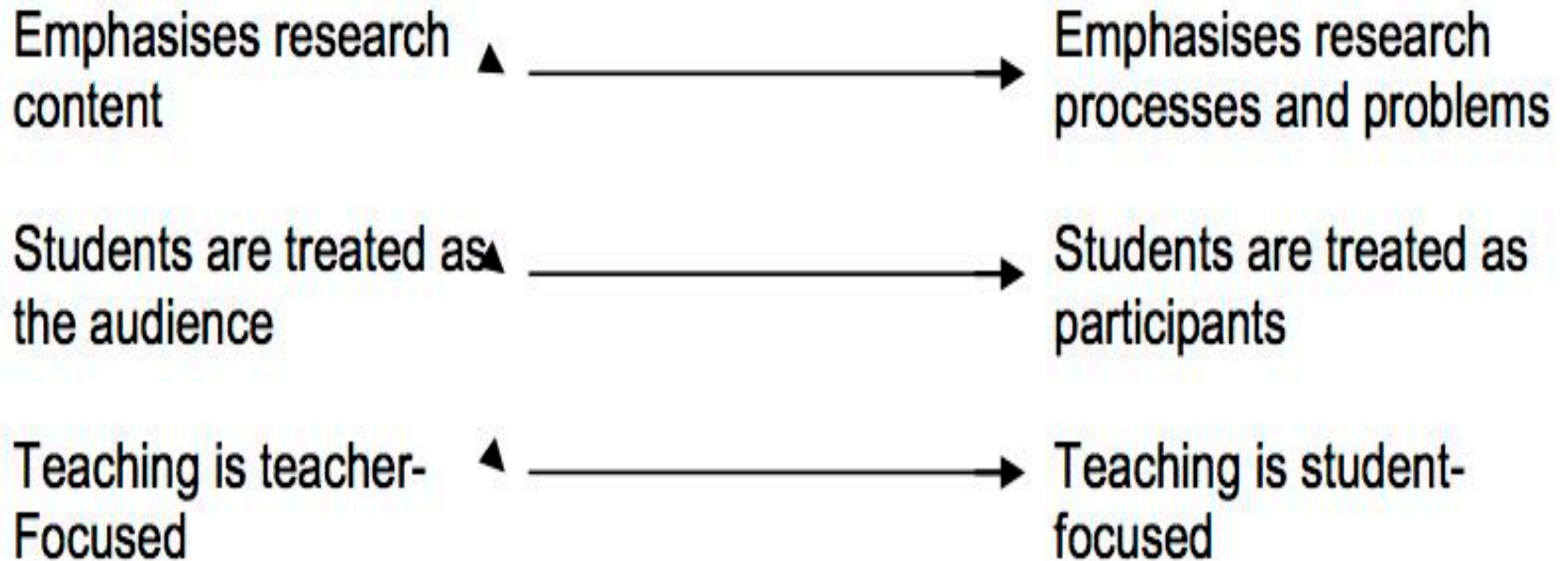
# Defining RBL 4: Student activity?

**Healey (2005) distinguishes between teaching that is:**

- **research-led:** students can be introduced to the latest developments, findings and results in their discipline by a member of staff
- **research-oriented:** students are taught about the research process and the ways in which knowledge is produced in their discipline by a member of staff
- **research-tutored:** students are actively engaged in discussing, criticising and interpreting existing research in class or in their coursework under the guidance of or with feedback from a member of staff
- **research-based:** students devise and carry out an independent piece of research under the supervision of a research tutor

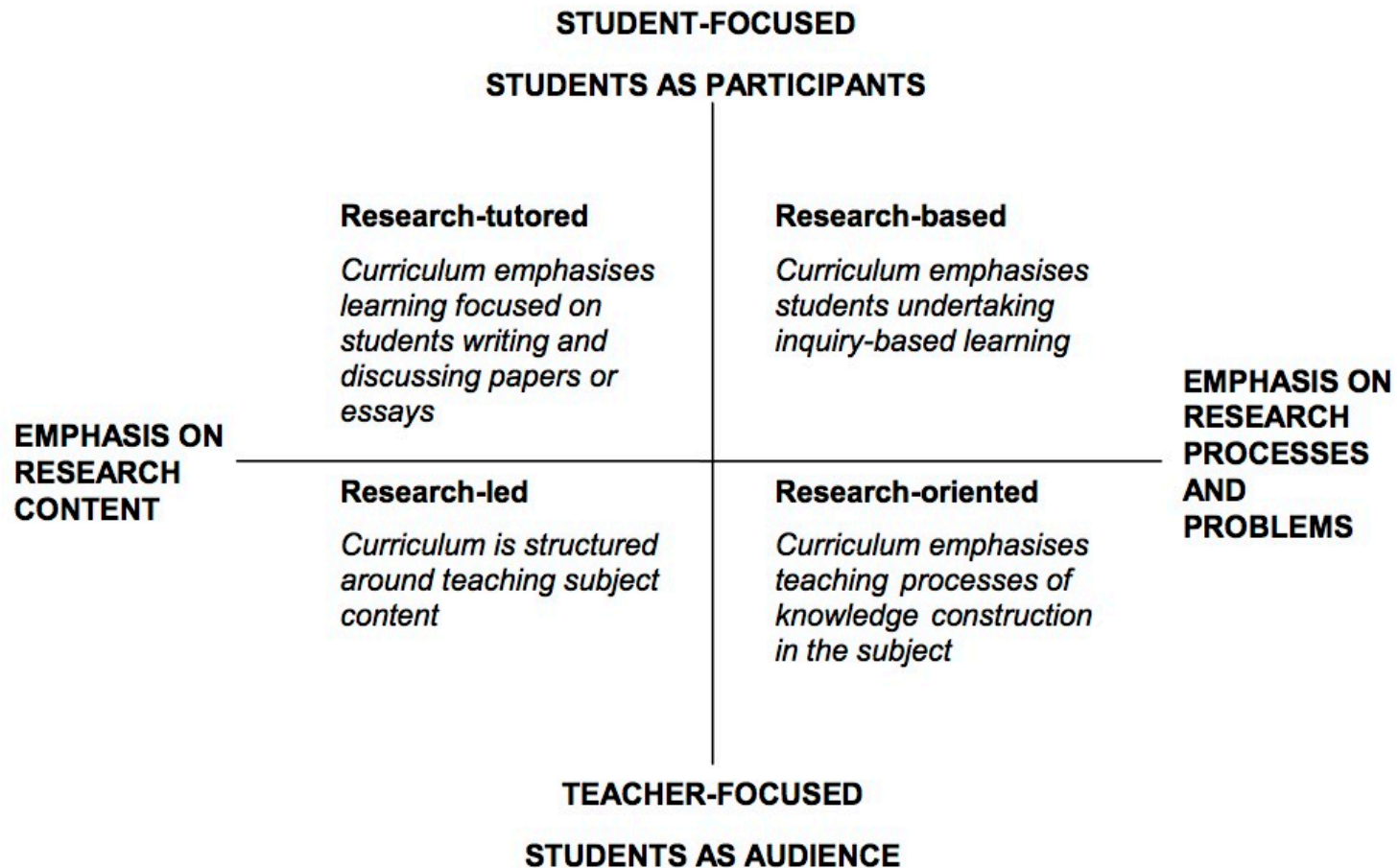
(adapted from Healey, 2005)

# Healey's (2005) Three Dimensions of Curriculum Design



Source: Healey, M (2005) *Linking research and teaching: exploring disciplinary spaces and the role of inquiry-based learning*, p. 69

# Healey's (2005) Research-Teaching Nexus



Source: Healey, M (2005) *Linking research and teaching: exploring disciplinary spaces and the role of inquiry-based learning*, p. 70



# Rueß, Gess & Deicke (2013) An Attempt to Sharpen the Concept of Research-Based Learning

	<b>Research results</b>	<b>Research methods</b>	<b>Research process</b>
<b>learning by research</b>	... conduct a literature search on a research topic (A3)	... apply a chosen method to a given research problem (B3)	... conduct their own research project (full cycle) (C3)
<b>applied learning</b>	... discuss research findings (A2)	... discuss pros and cons of particular methods (B2b)	... discuss research designs (C2b)
		... practice methods (B2a)	... develop research questions or designs (C2a)
<b>receptive learning</b>	... are presented research findings (A1)	... are taught research methods (B1)	... are taught about the research process (C1)

Source: Rueß, Gess, Deicke (2013) *Schärfung des Konzepts Forschenden Lernens...*

# What, then, is ,Research-Based Learning‘?

**Type 1:**  
Learning  
to  
become  
research  
ers



„In research-based learning (C3), students pursue a research question of their own choosing through the entire research cycle.“

**Type 2:**  
Learning  
by  
research



„In research-based learning (A3, B3), students pursue a set or independently chosen research question in order to gain a deeper understanding of particular learning content or methods in their subject.“

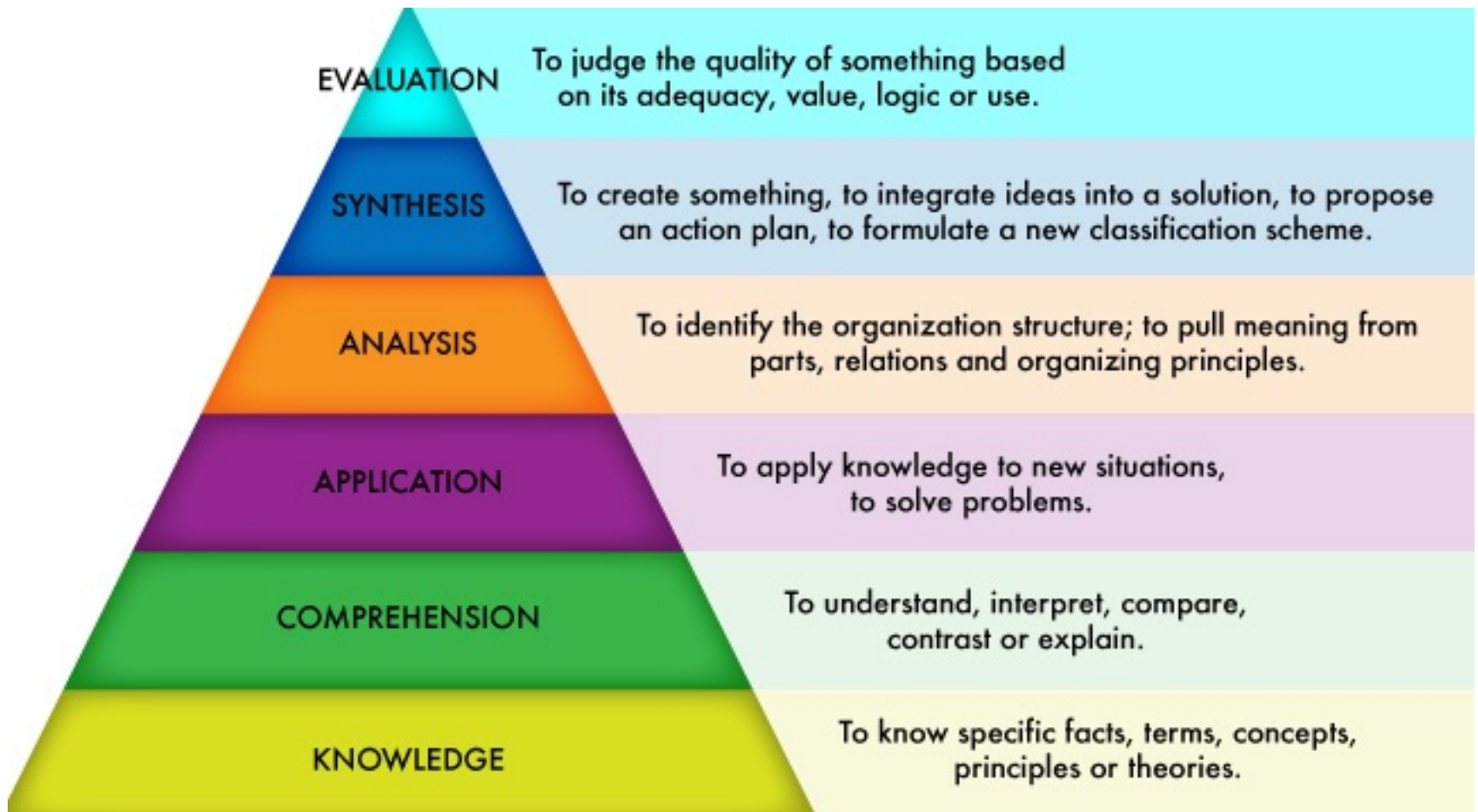
# What can this matrix be used for?

- Mapping possible 'research pathways' in your subject
- Help to identify research-related blind spots and gaps in the curriculum
- Help you think about learning activities in your subject (or even class) for each cell

## **Meyer (2003) Five stages of research action**

- **Stage 1:** Naive imitation
- **Stage 2:** Acting under close guidance and supervision
- **Stage 3:** Acting based on insight into a particular approach and grasp of a particular method
- **Stage 4:** Independent planning, implementation and evaluation of a research project
- **Stage 5:** Reflexion, critical analysis of own research actions

# Bloom's Taxonomy



Source: <https://www.uaa.alaska.edu/studentaffairs/assessment/images/Bloom-s-Taxonomy.jpg>

# Forms of Undergraduate Research/ Inquiry-Based Learning

Complexity

Evidence-  
Based  
Learning

Problem-  
Based  
Learning

Project-Based  
Learning

Research-  
Based  
Learning

Service  
Learning

Staff project

Own project

Time

# Evidence-Based Learning

## Process (model)

- Students in class are given a short scenario that requires them to come to a decision based on subject-specific evidence
- They discuss the problem and interpret the evidence
- They arrive at a decision based on evidence
- They discuss their decision and the reasoning behind it with their class
- They receive feedback from their peers and their tutor (+ model solution)

## Skills

- Limited data/Evidence interpretation
- Reasoning
- Decision-making
- Communication

# Problem-Based Learning

## Process (model)

1. Members of the class (10-15) students are set up in groups
2. Clarification: students define the problem
3. They generate ideas, identify what is known and what isn't
4. They identify learning steps for solving the problem
5. Students work individually towards the solution
6. The groups bring together their individual findings and report back to class
7. Class reflects on the results and the process, receives feedback from the tutor

## Skills (examples)

- Generation of hypotheses
- Identification of resources available and required
- Information retrieval
- Synthesizing information
- Formal and informal communication
- Teamwork
- Time-management (usually in class)
- Decision-making
- Reflexion/Feedback

# Project-Based Learning

## Process (model)

1. Groups are given larger scale task or problem to work on outside of class
2. They agree on the steps needed to solve the task or problem (division of labour, goals)
3. Individuals get together regularly to update the rest of their team on progress made. They may seek feedback from the tutor. (Class time is set aside for supporting the groups)
4. The group prepares their results to report back to class, including reflections on the process
5. Class reflects on the results and the process, receives feedback from the tutor

## Skills (examples)

- Generation of hypotheses
- Identification of resources available and required
- Information retrieval
- Synthesizing information
- Formal and informal communication
- Teamwork
- Goal-setting
- Project-management
- Decision-making
- Reflexion/Feedback



# Service Learning

(Projects with/for external parties)

## Process (model)

1. A ,client‘ (company, NGO, community organisation) approaches the tutor with a real problem
2. The group meets with the client to discuss the parameters of the project
3. The group devises and presents a solution to the client

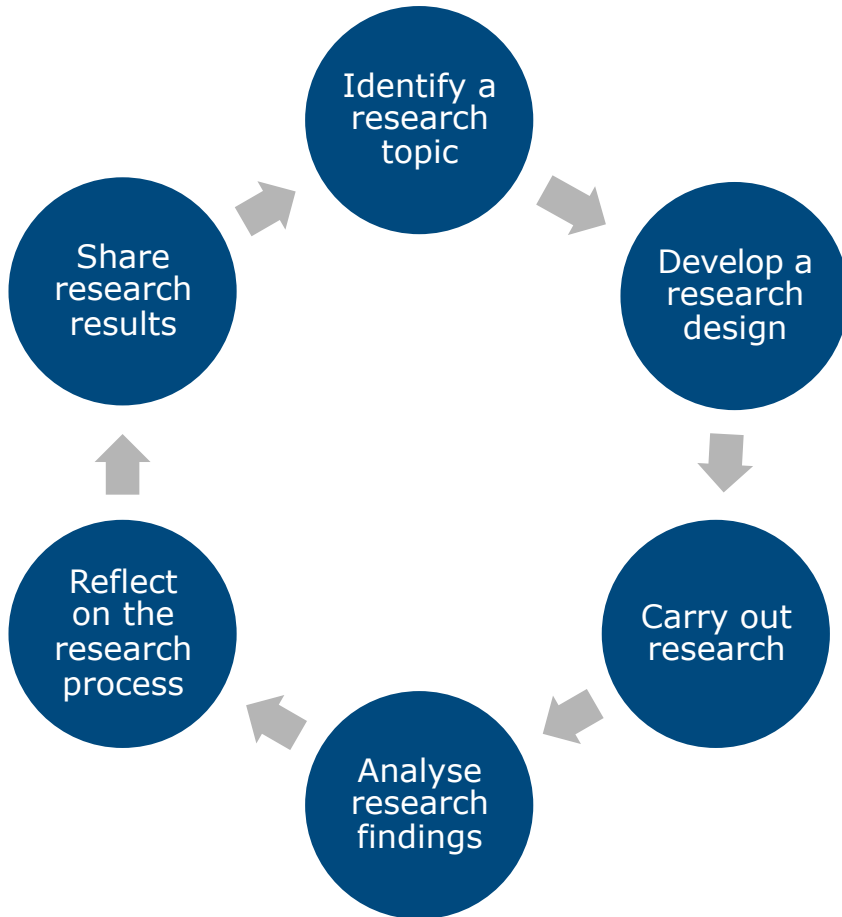
(competitive version)

3. Groups devise different solutions for the client and ,pitch‘ them against each other
4. Class reflects on the results and the process, receives feedback from the tutor

## Skills

- Generation of hypotheses
- Identification of resources available and required
- Information retrieval
- Negotiation
- Teamwork
- Expectation-management
- Project-management
- Decision-making
- Reflexion/Feedback

# Research-Based Learning



## Skills

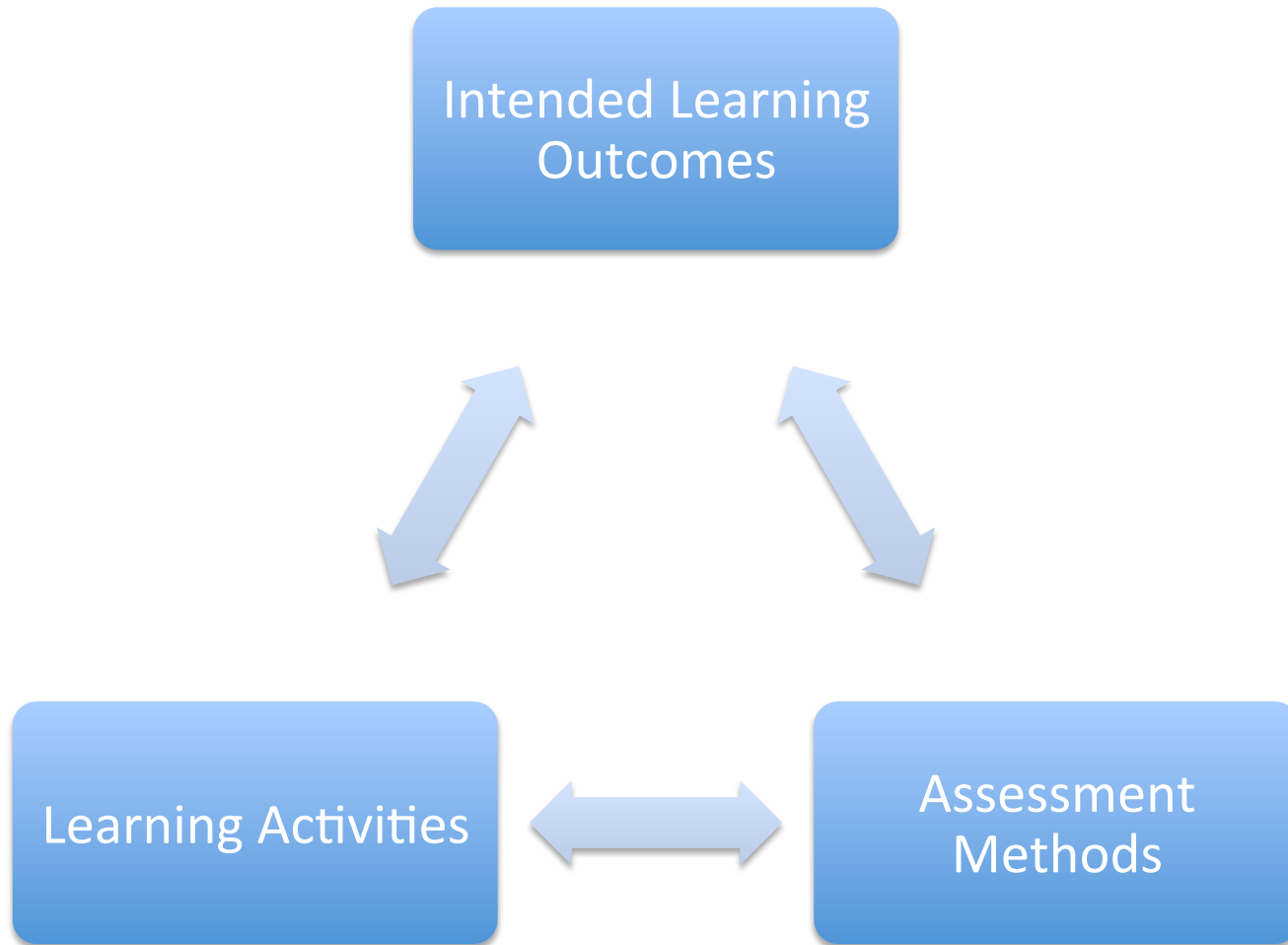
- Application of theoretical and methodological knowledge
- Ability to generate ,new‘ knowledge/information
- Reflect on the potential and limitations of research design and findings
- Act as responsible members of the scientific community

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Source: Rueß, Gess, Deicke (2013) *Schärfung des Konzepts Forschenden Lernens...*

# Biggs (2003): Constructive Alignment in Curriculum Design



Adapted from: Biggs (2003)

# References:

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