Core Research Area: *Contextualized Learning*

Research project proposals produced by the experts of the 4th STELLAR Delphi round

1. **Contextualized Learning**
   **Group:** Researcher
   **Project title**
   Moving forward with OER contextualisation
   **Project description**
   How to capitalize on the increasing availability of OER to build contextualized learning material
   **Project partners**
   Open UNiversity UK
   Commonwealth of Learning
   TESSA members
   **Project justification**
   Increasing demand for HE, teachers education in particular.

2. **Contextualized Learning**
   **Group:** Researcher
   **Project title**
   Learning from everyday experiences to inform decision making
   **Project description**
   How do people learn from their everyday experiences? How do they use their experiences to inform their decisions?
   **Project partners**
   
   **Project justification**
   help people become more informed citizens
   help people make better decisions that will support personal growth

3. **Contextualized Learning**
   **Group:** Researcher
   **Project title**
   The Impact of contextualized learning activities presented via TEL on middle and high school students’ achievement in mathematics.
   **Project description**
   What is the difference in mathematics understanding between students who learn mathematics concepts using contextualized TEL and those who experience programmed learning activity without context, and those who learn mathematics concepts face-to-face? What context offers the best opportunity to learn mathematics concepts? How important is the context related to the mathematics content? Or, which context is better suited for a particular mathematics concept?
   **Project partners**
   School Districts, the university.
   **Project justification**
   Situated learning theory suggests that students learn best when it is relevant and meaningful. It is important to gather evidence in order to determine whether it is effective for students to learn
mathematics in situational, contextualized fashion in order to ascertain the degree of learning transfer to other situations.

4. Contextualized Learning Group: Researcher

Project title
Mobile Phones as Mediating Tools Within Augmented Contexts for Development

Project description
The nature of learning is being enhanced by mobile devices and the networks and media to which they connect people. Consequently, there is a need to re-examine approaches to the design of and research into learning experiences that incorporate mobile/cell phones in the learning context. The proposed work will draw on two key initiatives. Firstly, Design Research is an approach that tends to have interventionist characteristics, is process oriented and contributes to theory building. Secondly, an educational problem that mobile learning tries to solve is the design of Augmented Contexts for Development (Cook, 2010); these place context as a core construct that enables collaborative, location-based, mobile device mediated problem solving where learners generate their own context for development. The proposed project will revisit Design Research by making use of such questions as: what does the shift in the use of mobile devices for informal, formal and work-based learning (health) mean for the collection and analysis of data and what methods might we employ in a systematic, iterative and interventionist Design Research effort?

Reference

Project partners
Dutch OU, Nottingham, Institute Education, Apple, Google etc

Project justification
Learning relevance and design/learning science relevance

5. Contextualized Learning Group: Researcher

Project title
The impact of specific scientific context on science learning.

Project description
How the context (social, technological and/or content) influences science learning?

Project partners
??

Project justification
-

6. Contextualized Learning Group: Researcher

Project title
Authentic learning experience: Taping the expertise mind and professional practice

Project description
How does expertise practise in the field/discipline?
How do technologies facilitate professional practice?
What factors can further improve current practice through technologies?

Project partners
universities, industrial partners, government

Project justification
The project can potential improve professional practice with technology enhancement, and allow university students being involving in the study as they prepare for the future professions.

 STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning
7. **Contextualized Learning**  
**Group: Researcher**

**Project title**
Citizenship game: how to become social and critical citizens in Europe

**Project description**
How should a digital game be designed to effectively and efficiently support the development of citizenship of students in primary and secondary education? This is design-based experiment on the of use of games and learning effects.

**Project partners**
Research organizations, schools and technology-design companies

**Project justification**
Globalization asks for open societies. However, open societies seem to lead to more group thinking as people need some boundaries to structure their lives. But in practice, this is also means that some groups of people are excluded as they do not meet particular rules, norms and values that are set as boundaries by the majority. How to deal with this, is an important question of citizenship education.

Games and simulations can be used to trigger boundary crossing as they refer to a virtual world, and not the real one. In a later stage, this boundary crossing can be transferred to the real world.

8. **Contextualized Learning**  
**Group: Researcher**

**Project title**
A robust ubiquitous platform for collaborative and contextualised mobile learning

**Project description**
Although elements of this type of project have been considered previously (mobilearn, mlearn08 etc), experiments and trials have always worked with a subset of the following criteria.

1. Limited device choice (often not user-owned)
2. Limited to indoor/outdoor/one location
3. Content provided by teacher/expert/researcher
4. User generated content that can be shared later
5. Collaboration with others but not in real time
6. Limited delivery mechanisms
7. Limited media types
8. Limited portability between devices (eg. phone and PC)
9. Limited historical data (users movements, users studies, users collaborators)

A robust and ubiquitous platform for contextualised learning must provide or overcome all of these issues as well as others. It needs a degree of intelligence, to make connections that the learner is unaware of (such as possible collaborators with similar interests etc). To be ubiquitous, it must provide a level of service across platforms (in multiple aspects - different phones, different PC operating systems, the provision of learning material to both devices, making use of the abilities/constrictions of each device, for each learner). It needs to detect a users position, collaborators positions, time, interests, age etc etc). It should allow forward-sharing of information for future-collaborators (the idea of leaving user generated material at a point for future students devices to pick up when the information is deemed significant to that user).

It needs to work across multiple locations too. And be cheap. Any user generated content needs policing.

But fundamentally, if this system can be realised. It needs to be proven to be of use to students.

**Project partners**
University of Wolverhampton (technology expertise in LBS, context aware systems, wireless tech etc)
LSRI (multiple scenarios of location based context aware learning, educational theory)
Learning lab (ethical and educational theory)
Some schools (primary, secondary, adult education institutes)
Some museums (preferably a mix of indoor and outdoor)

**Project justification**
This kind of a system would provide a platform for a large amount of the educational research for the community. In truth, the question for this particular project would be more around ‘is it possible’, but given that it was, the path would be free for many research questions on Life long learning, informal learning, collaborative learning, ethics of mobile learning and the connection between informal and formal learning to name but a few. A sufficiently large spread (physically and in numbers of users) would show whether this system provides an economically viable system.

9. **Contextualized Learning**
   **Group: Researcher**

**Project title**
Personalised learning through contextual information

**Project description**
As mobile devices and contextual sensors are getting more available we are able to learn more about the users and adapt their learning accordingly to personalise it to their specific needs. Information such as what they have done recently, where they have been, what they are doing at present, their previous preferences and even such things as the weather conditions can all be used to adapt the learning delivery to make it personalised for each user and thus enhance enjoyment and reduce frustrations of learning.

**Project partners**
CS department Bristol University
Educational Dept Bristol University
Secondary and Primary schools

**Project justification**
As previous said we are all unique and we should be given opportunities to learn in the ways that best suit us rather than trying to conform to ways that suit some students and not others. We are all good at something so it is important that we use technology to try to be able to achieve the best delivery mechanisms and choices for the users to be able to enhance their learning and make it more enjoyable for them.

10. **Contextualized Learning**
   **Group: Researcher**

**Project title**
The Right Tool at the Right Time

**Project description**
Can we identify what the learning tasks at hand and provide the right tool at the right time? Can we use ubiquitous computing and human-computer interaction techniques to understand the contexts and provide just-in-time learning?

**Project partners**
TERC, science of learning center

**Project justification**
Learning should happen anytime, anywhere!

11. **Contextualized Learning**
    **Group: Researcher**

**Project title**
Improve Metacognition and Self Regulated Learning to Prepare Students for Future Learning

**Project description**
1. How do we help students develop metacognitive strategies and become self regulated learners so that they are better prepared to learn on their own?
2. Can we design learning environments that provide choices to learn, and then monitor students choices in terms of their behaviors and learning performance to provide scaffolding and feedback to help them become better learners?
3. Can learning environments be designed to develop learner models that facilitate and support choice adaptive learning?
I think TEL is poised to develop formal and informal learning environments that extend beyond a

**STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning**
narrow approach to learning, i.e., students can be provided with different choices (topics, resources, social interactions with virtual and human agents, assessment methods) to help students learn. Such environments would better emulate real world learning and learning that these students will have to do in the future when they are in the work place. Typically beginning learners do not do well when faced with choice, they end up making suboptimal strategies for learning. It is important to develop learning environments that can monitor student behavior and adapt to guide students become better self regulated learners.

**Project partners**

NA (I am from the USA). In the USA, I would like to collaborate with colleagues from Stanford University and North Carolina State Univ.

**Project justification**

I believe learning in academic environments needs to become more relevant to real world problem solving, and technology can play a role in making this happen.

---

12. **Contextualized Learning**

**Group:** Researcher

**Project title**

My contextualized individual learning support system

**Project description**

- identify learning needs and goals on an individual bases automatically
- adapt learning path and activity control to individual needs
- implement new ways of learning activities

**Project partners**

TUG, KUL, OU UK, OU NL, FIT, L3S, UC3M, RWTH, IMC, UIL, Bayer, etc.

**Project justification**

no comment

---

13. **Contextualized Learning**

**Group:** Researcher

**Project title**

The learner/computer_environment as a single complex learning system: guiding/guided TEL systems for efficient inclusion of very different learners.

**Project description**

The challenge is to be able to include all learners in the activity whatever their individual difficulties may be with regards to accessing the TEL system and in relation to the learning activity itself. The question is very general because the learning group is often just put together for the occasion (it is not a community of practice, for example). It cannot be assumed that the TEL environment is familiar to the users, nor is it certain that the teacher will be able to properly prepare activities for this specific group, depending on the difficulties of the individuals. This kind of situation is quite classic in e-learning situations and most of the time it results in a great burden for the teacher (or tutor) to manage within tight time constraints.

The main idea is to consider the couple learner/computer environment as a single system. This approach modifies the way to design very differently TEL systems which have to guide and to be guided explicitly. Reflexive processes are the kernel concepts of the research.

Applying this approach to collective learning situations including impaired people will be a demonstration of the validity of the underlying concepts.

**Project partners**

Université de Lyon (LIRIS UMR CNRS 5205 and ICARE UMR CNRS 5191)

Consiglio Nazionale delle Ricerche (ITD-CNR group)

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI group)

Universität des Saarlandes (USAAR group)

Université du Maine (LIUM group)

Fondation Formation Universitaire à Distance (FERNUNI group)

Lyon Ingénierie Projets (Financial and administrative management LIP group)
Project justification
Inclusion of very different learners is a well known challenge (web learning, collective learning, opportunistic learning, working place learning, unformal learning, etc...). Clear concepts, methods and tools are necessary to face this challenge in the society.
The scientific challenge is to associate actively reflexive and external observations of the learning activity to allow negotiation of the global learning process. Guiding and being guided is the result of an explicit process.
From a technological point of view, this work needs to consider the observation process as an explicit and specific process to study, formalize and to instrument with specific computer objects (modeled traces for example).

Project title
Collaborative Reasoning and Implicit Theory Discovery
Project description
How students/people build abstract models of real life problems and understand the theories that can be used to solve those problems, as instances of a more general class. (examples in economics, environment, society, engineering, ...)
Project partners
Computer science institutions in interaction, multimedia information systems and communication tools; Psychology expertise; Professional representatives.
Project justification
The use of an open, collaborative platform integrating information, communication and support for thinking is relevant. Systemic reasoning is the critical resource for dealing with the growing complexity of professional problems.

15. Contextualized Learning Group: Researcher
Project title
Understanding, designing and realising effective learning contexts for transformational learning in the digital age
Project description
What is context?
What are the key defining features of contemporary learning contexts?
What is the role of new forms of dialogue and interaction in researching and designing context?
How do we design and evaluate digitally augmented contexts?
How does TEL design and evaluation deal with the evolving, and often volatile, nature of learning contexts?
What are the relationships between individuals, peers, teachers and communities in future learning contexts?
What will future, TEL-rich, learning contexts look like?
Project partners
CASS school of Education, (University of East London, UK)
Learning Sciences Research Institute (University of Nottingham, UK)
Computer Science (University of Leeds, UK)
Open University of Netherlands (Holland)
Centre for Learning and Knowledge Technologies, Linnaeus University (Sweden)
Various social enterprises in UK and Europe tackling problems of inclusive education in disadvantaged communities (e.g. via links with existing Universities named above, such as University of East London)
Plus others, after a bit more thought and research
Project justification

STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning
As TEL augments and personalises future learning contexts in ways that are far removed from traditional, physical and location-based contexts, a better understanding of what a learning context is and how we design or promote effective future learning contexts, is arguably THE issue in TEL research and practice. This cuts across virtually every other TEL theme or strand, and yet is arguably one of the most poorly understood central concepts. Thus far research into contextualised learning has focussed on context-aware technologies and such like, instead of focussing on the fundamental nature and importance of context, and then, how technologies can be part of orchestrations that lead to better learning contexts. Similarly, often context-aware technologies have been deployed in situations that suit them (e.g. museums and field trips), instead of being deployed more creatively and substantially to address significant learning problems. Arguably THE significant learning problem over the next decade will be how, in times of severe economic austerity, we can support learning that is transformational within disadvantaged groups and communities. What sort of rich, engaging and situated technology-enabled learning contexts will bring cost-effective education to those who, without such technology-enabled support, will be excluded from education, work and active participation in society.


Project title
agency and learning identities across settings

Project description
Key questions: how do people become empowered actors in their own lives? What learning goals support this becoming? How can technology support bringing lessons from educational settings to authentic settings elsewhere?

Project partners
community organizations, publishers, hardware and software developers

Project justification
creation of knowledge management models that encompass ‘school 2.0’ would both require advancing theories of instruction and learning, and theories of technology supports for human activity.

17. Contextualized Learning Group: Researcher

Project title
Development Physics simulations tools for augment learning

Project description
improving the effectiveness of contextualized learning arrangements and tools

Project partners
Concept Learning of Science (CoLoS) group http://colos.org/

Project justification
It is important to use modern technology more effective to help learner to understand core concepts in physics and enjoy the fun of physics!

18. Contextualized Learning Group: Researcher

Project title
Learning about Careers

Project description
How can we improve access to information about careers and support educational transitions

Project partners
Careers services
Technical providers
Careers researchers

Project justification

STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning
19. **Contextualized Learning**  
**Group: Researcher**

**Project title**
Controlling context

**Project description**
How can we better cater for the fact that, in real life, people change continually according to (for example) social setting, learning needs, organisational context, mood, intention, familiarity with subject, subject, location, surroundings etc? This would be a broadly design-based approach that would iteratively identify shifting contexts and methods of enabling learners to move between them.

**Project partners**
Almost any - diversity necessary (schools, universities, industry partners, informal networks, non-formal learning communities, communities of place, communities of practice, etc)

**Project justification**
Computers are universal machines, environments and media. It is strange, therefore, that more attention has not been paid to the paucity of ability to change spaces, change our personas, manage our changing identities and so on as we move between them. Adaptive systems sometimes try to account for such things, but there is little research into adaptable, usable systems that give control to the learner, rather than the machine, at an appropriate granularity.

20. **Contextualized Learning**  
**Group: Researcher**

**Project title**
Environment for interactive context-aware learning and outcome assessment

**Project description**
Virtual interactive environment for fast and flexible deployment of learning opportunities at the workplace

**Context modelling**

**Project partners**
-

**Project justification**
-

21. **Contextualized Learning**  
**Group: Researcher**

**Project title**
The role of online simulations in situated learning

**Project description**
Can online simulations of realistic work-based practices provide opportunities for truly situated learning? A 2-year study with undergrads and postgrads which enables them to take part in online simulations, using a range of technologies such as mash-ups and virtual worlds, which evaluates the extent to which they perceive their learning as situated.

**Project partners**
Industries, online technology providers.

**Project justification**
The gap between theory and practice can be wide when students first qualify, as many work situations are impossible, dangerous or unethical for students to experience prior to qualification.

---

**STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning**
22. Contextualized Learning

Group: Researcher

Project title
Augmenting natural inquiry

Project description
What are the tools to augment, methods to build complexity and motivation to trigger curiosity in a potential learner to step on the path of inquiry concerning everyday objects, themes and notions? This is a TEL based investigation of the natural process that occurs within everyday learning of children’s life who are not yet familiar with formal learning, or those that are in primary or elementary education with more freedom to participate in informal learning situations, with possibilities of identifying values as outcomes.

Project partners
Unfortunately I am not in STELLAR and have no EU partnership, so I am not able to name specific institutions.

But, the role of industry producing Future Enchanced technology is crucial; media and contect development as well as all sorts of technology integration with augmented reality; adaptive system, data mining and synthesis of knowledge aquisition; cognitive science, phsychology and pedagogical guidance is of great importance.

Project justification
Acknowledgement of the everyday contextual learning process with outcomes that can be mapped onto the requirements of the era.

Uniquitous smart technologies that are far from requiring one to sit and bend forward, but rather require natural movements comprehensive to the inquiry.

Development within cognitive science with respect to learner motivation, contextual inquiry methods, constructionism, capacity building and enhancing complexity based on Vygotskian ZPD and Activity theory.

23. Contextualized Learning

Group: Researcher

Project title
Anticipating future contexts when understanding and applying knowledge/skills in context

Project description
Research Question: how can the paradigm of “contextualized learning” be extended to look forward rather than back?

Short description: Context is essential to students’ understanding of when to apply knowledge/skills. In undergraduate teaching, the context for learning and its application is often provided by examples that are drawn from the past, hence are obsolescent or outdated, reducing learners’ employability on graduation. In this project, approaches such as horizon scanning will be used to develop and evaluate TEL tools that can be used to create examples and contexts that are informed-guesses of future understandings and contexts.

Project partners
Partners in TEL-Map project

Project justification
This project could raise the employability of recent graduates, by helping them to get early warning and early experience (maybe 2-3 years before graduation) of the kinds of knowledge/skills, and understanding of when to apply them, that employers value.

24. Contextualized Learning

Group: Researcher

Project title
Mixed learning environements: Combinations of authentic real-world objects and digital information

Project description
Explores the relation between real-world experiences with authentic objects and the potentials of digital media (e.g. augmented reality devices) to shape and facilitate these experiences

Project partners

STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area Contextualized Learning
Museums, cultural heritage sites, natural preserve areas etc.

Project justification -

25. Contextualized Learning  Group: Educator
Project title
technology enhanced situated cognition

Project description
How can mobile, ubiquitous and virtual technologies support situated cognition?
How can we blend physical and virtual reality to provide authentic learning experiences?
Not all learning can take place in an authentic context, but increasingly we can simulate or augment reality to create valid learning contexts. The aim of this project would be to explore the boundaries of situated cognition supported by new and future technologies.

Project partners -

Project justification
increasingly complex learning technologies enable us to deliver more immersive learning experiences in context. Situated cognition requires learning to be authentic, but increasingly we can blend the virtual and augmented with the real to deliver learning experiences never before possible.

Project title
Researching the use of digital games to support contextualized learning in Higher Education

Project description
The project aims to investigate the issues associated with the development a professional interactive game for learning in HE. The project will explore issues on game-based learning by enabling learners to contextualize their learning experience by immersion and interaction with a simulated environment. The additional motivational features associated with a gaming environment – sense of mission, reward mechanism, progression pathways – will provide a platform for the construction of a more intense and engaging experience in support of a situated learning approach to the Higher Education experience. Other important issues will be the working relationship between the professional game industry and educators.

• Can a professional game be developed for the Higher Education sector?
• What are the issues involved in creating an engaging gaming environment delivering effective learning experiences for university students?
• What might be the issues involved in the potential collaboration between the professional game industry and educators.

Project partners
• London Metropolitan University
• Other European Higher Education institutions
• An industry partner from the game design and production sector

Project justification
Digital games are now part of the mainstream entertainment landscape for the new generation of learners. Recent examples of edutainment gaming and the work of the Serious Game Initiative demonstrate the potential educational use of gaming. Game-based learning can blur the boundaries between formal learning and informal learning and “situate” a learning experience in an engaging interactive environment.

27. Contextualized Learning  Group: Educator
Project title
Breaking the hardest technology: from school learning to continuous learning in a digital world
Project description
How to provide learners with meaningful learning experiences using the most appropriated learning technologies and devices?
How to bridge the past with future knowledge so that learners can understand their present and build the future?
How to engage students in passionate personal and social projects.
How to update educators’ knowledge of contemporary learning issues.

Project partners
University of Barcelona
ITD
Istituto per le Tecnologie Didattiche, Consiglio Nazionale Ricerche
Södertömn Univeristy Istituto
Limburg Catholic University College
Center for Educational Technology
Centre for Social Innovation
Karlova University
Helsinki University
University of Paderborn
Amsterdam University
IN2 search interfaces development Ltd

Project justification
Regardless of proposals advocating a marked change in schooling and the considerable development of virtual learning environments, the “grammar of schooling” (Tyack & Cuban, 1995) still very much relies on the 1x1x1 (and now x1x1) formula: 1 teacher, 1 classroom, 1 textbook, and now, 1 computer, 1 smartboard. In a fast-changing world, where knowledge and how to acquire it is an ever-moving target, this current schooling metaphor does not seem the most appropriate.
Currently there are three main issues for secondary schooling which have parallel discourses but need to be addressed as an integrated topic: (a) the need to develop the competences that underlie the innovative educational activities that are required by the knowledge society; (b) the need to understand how children and young people learn in a highly technologically mediated world, with an overload of multimodal information and a shortage of meaning and understanding; (c) and the need to use emerging technologies to rethink the whole metaphor of schooling, from the notion of knowledge to assessment, through the relationship between teachers and learners and the role of learning outside of school.
The problem here seems not to be the shortage of technologies but the difficulty of breaking the hardest educational technology: current school organization, with an embedded notion of time, space, knowledge and assessment.

28. Contextualized Learning

Project title
Why do they need to know?

Project description
What percentage of secondary school teachers can explain why they are teaching what they are teaching? Can they clearly state at the start of a unit of work, how or why the skills or information they are imparting to students be of benifit to them now or in the future.
What difference does this make to the students engagement and retention.

Project partners
teachers, students, parents, universities, business, community

Project justification
There has never been a time when a relevant education has been more important. Literate and numerate, self motivated learners with high levels of emotional intellignece, good communication skills, appropriate levels of self esteem will be able to exploit technology and other tools to build meaningful lives.
A lot of what is taught in schools is irrelevant the students know it even if the teachers don't.
STELLAR Delphi Study - research project proposals by the experts of the 4th STELLAR Delphi round for the Core Research Area *Contextualized Learning*