WHY ENGAGE UNDERGRADUATES IN RESEARCH PROJECTS?

Reflections on the (expected) learning gains of students and academics

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BACKGROUND: The importance of (doing) research

We are all researchers now (...) teaching and research are becoming even more intimately related (...) in a 'knowledge society' all students – certainly all graduates – have to be researchers. Not only are they engaged in the production of knowledge; they must be educated to cope with the risks and uncertainties generated by the advances of science (...)

(Our emphasis. Peter Scott, quoted by Jenkins & Zetter, 2003, p.3)

THE CONTEXT: QResearchers Project (I)

GENERIC DESCRIPTION

- Institutional context: Queen Mary University of London

- Pilot project, institutionally funded

- Duration of the overall Project: current academic year (2014/2015)

- Involvement of undergraduate students in research activities outside the classroom

- 8 research projects across the disciplines throughout the academic year

- 1 or more students *per* project proposed by academics leading the projects

THE CONTEXT: QResearchers Project (II)

MAIN GOALS

- To raise students' potential interest in postgraduate study

- To develop/enhance disciplinary-specific and also transferable skills

- To enrich the students' overall experience of Higher Education

- To increase students' employability skills
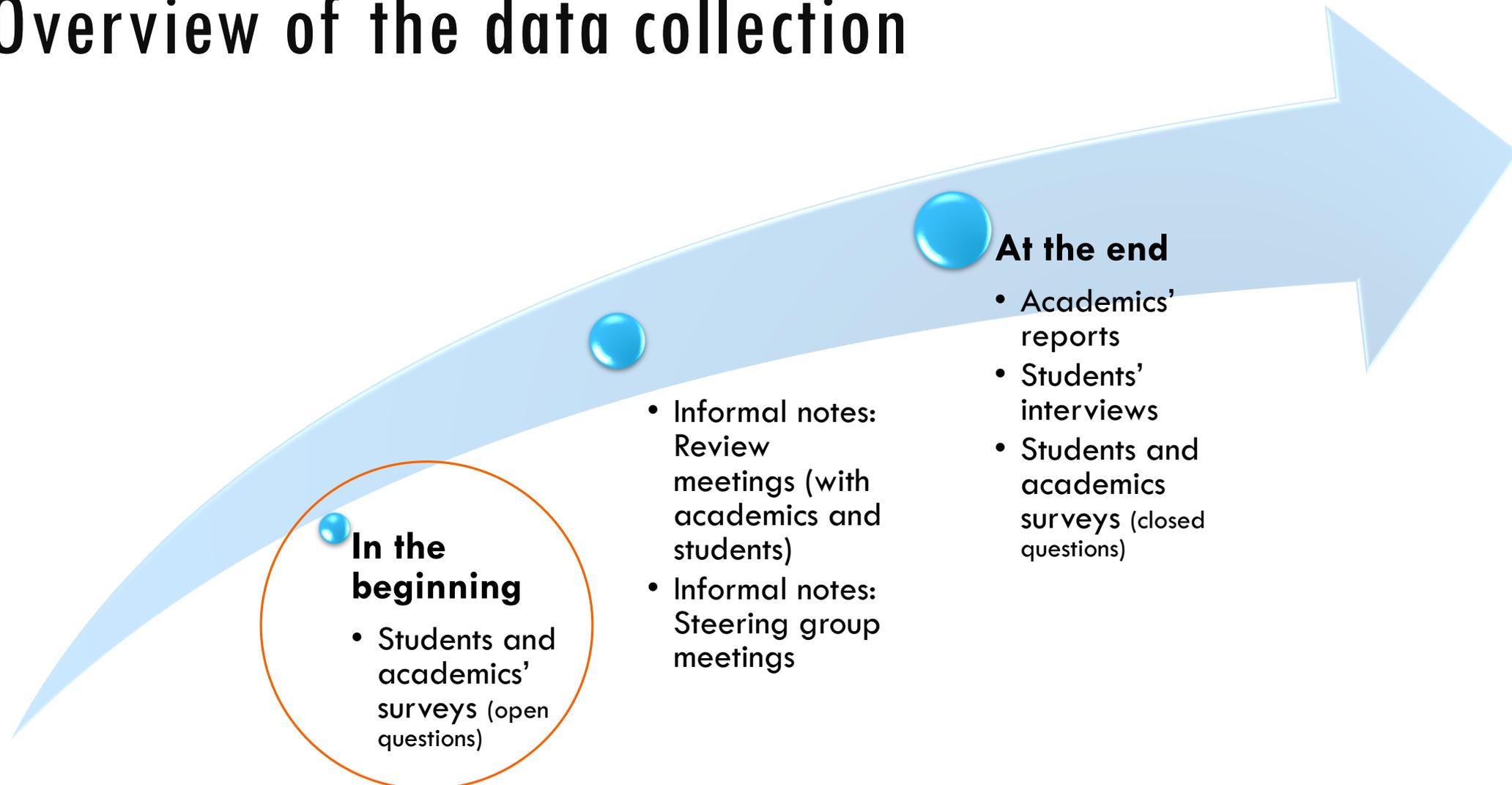
THE CONTEXT: QResearchers Project (III)

Learning Development at QMUL

Design and implementation of the evaluation and monitoring process

- To clarify the Project's outcomes and benefits

- To make recommendations for continued institutional support and embedding

EVALUATION AND MONITORING PROCESS:
Overview of the data collection

In the beginning

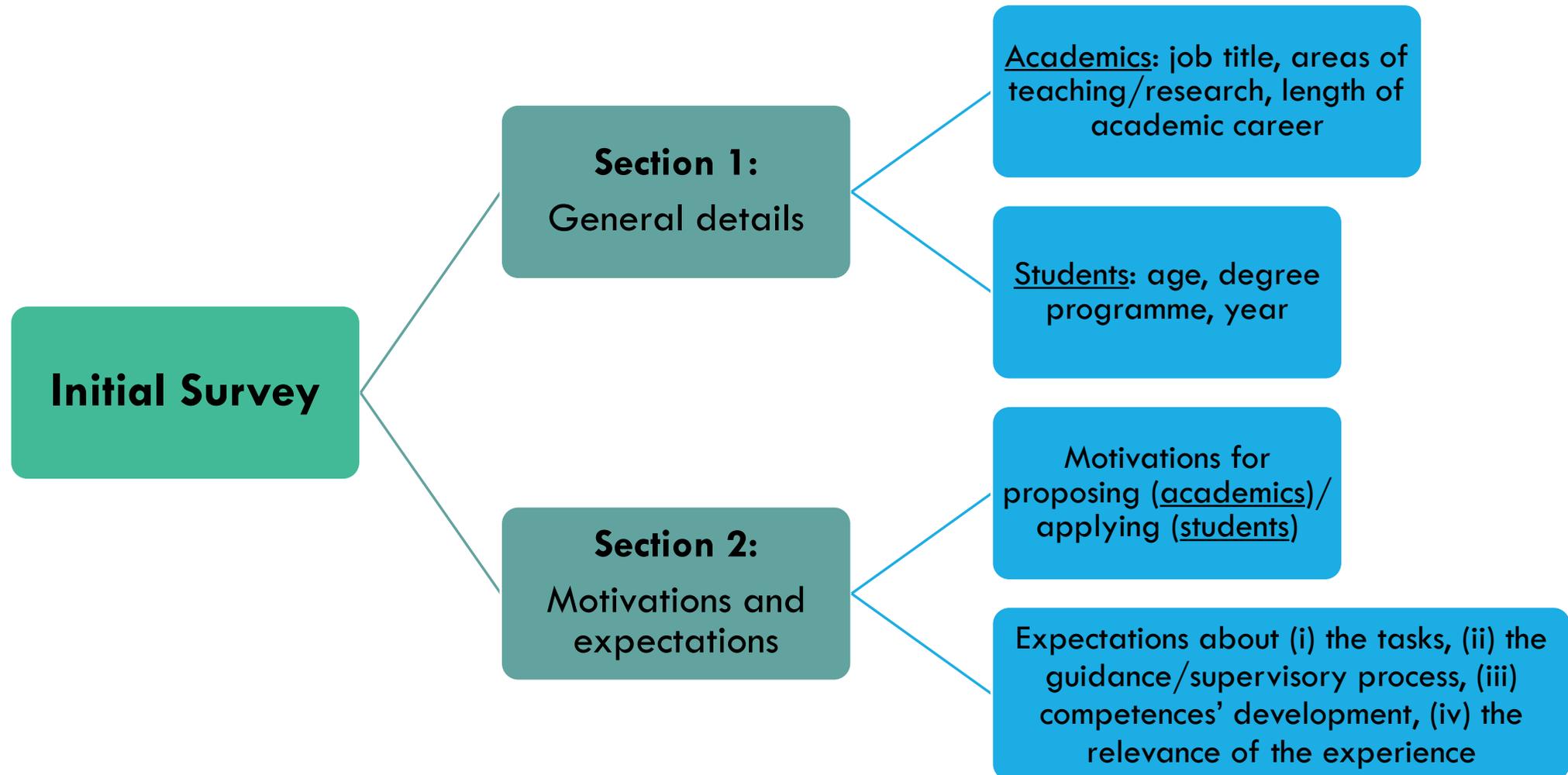- Students and academics' surveys (open questions)

- Informal notes: Review meetings (with academics and students)
- Informal notes: Steering group meetings

At the end

- Academics' reports
- Students' interviews
- Students and academics surveys (closed questions)

EVALUATION AND MONITORING PROCESS:
Initial moment

Initial Survey

Section 1:
General details

Academics: job title, areas of teaching/research, length of academic career

Students: age, degree programme, year

Section 2:
Motivations and expectations

Motivations for proposing (academics)/ applying (students)

Expectations about (i) the tasks, (ii) the guidance/supervisory process, (iii) competences' development, (iv) the relevance of the experience

ACTIVITY 1.1

5/7 minutes
Individually

POSITIONING YOURSELF AS ACADEMIC/SUPERVISOR OR STUDENT

1. Before being involved in your research project

Please remember:

- *What expectations did you have about the research experience, particularly in terms of your personal, academic and career development?*

2. After you finished your research project

- *Were your expectations met? (Please tick.)*

- *What were the main gains of the experience for you?*

ACTIVITY 1.2

IN SMALL GROUPS   10/12 minutes

Sharing your experiences:

- What are the main similarities?

- What are the main differences?

Choose 1 person to report back

REPORTING TO THE WHOLE GROUP

Sharing experiences; finding patterns and differences

BACKGROUND: The importance of being involved in research activities (I)

Learning is essential for human growth. Research is the fundamental human learning activity, involving enquiry, problem solving, diversity, flexibility and decision-making. It encourages and enables the development of creative thinking, problem-solving strategies and abilities which in turn help others to approach everyday life as well as professional, political, local, national and international questions and issues.

(Our emphasis. Wisker, 2005, p.5)

BACKGROUND: The importance of being involved in research activities (II)

Research skills are essential to all!

(…) not only researchers (…) need these skills, but the skills are needed in all kinds of jobs where it is important to constantly follow new knowledge, understand phenomena with the aid of scientific thinking skills, and to be able to act as an active knowledge builder in society.

(Our emphasis. Murtonen et al., 2008, p.609)

BACKGROUND: The importance of being involved in research activities (III)

- For example, senior researchers benefit from this initiative particularly in terms of their own personal and professional development, career progression, and even enthusiasm and credibility they may demonstrate to the students (Brown & McCarteny, 1998; Jenkins & Zetter, 2003)

- Several studies report effects on retention, persistence, and promotion of science career pathways not only for regular students, but also for underrepresented groups (Nagda et al., 1998)
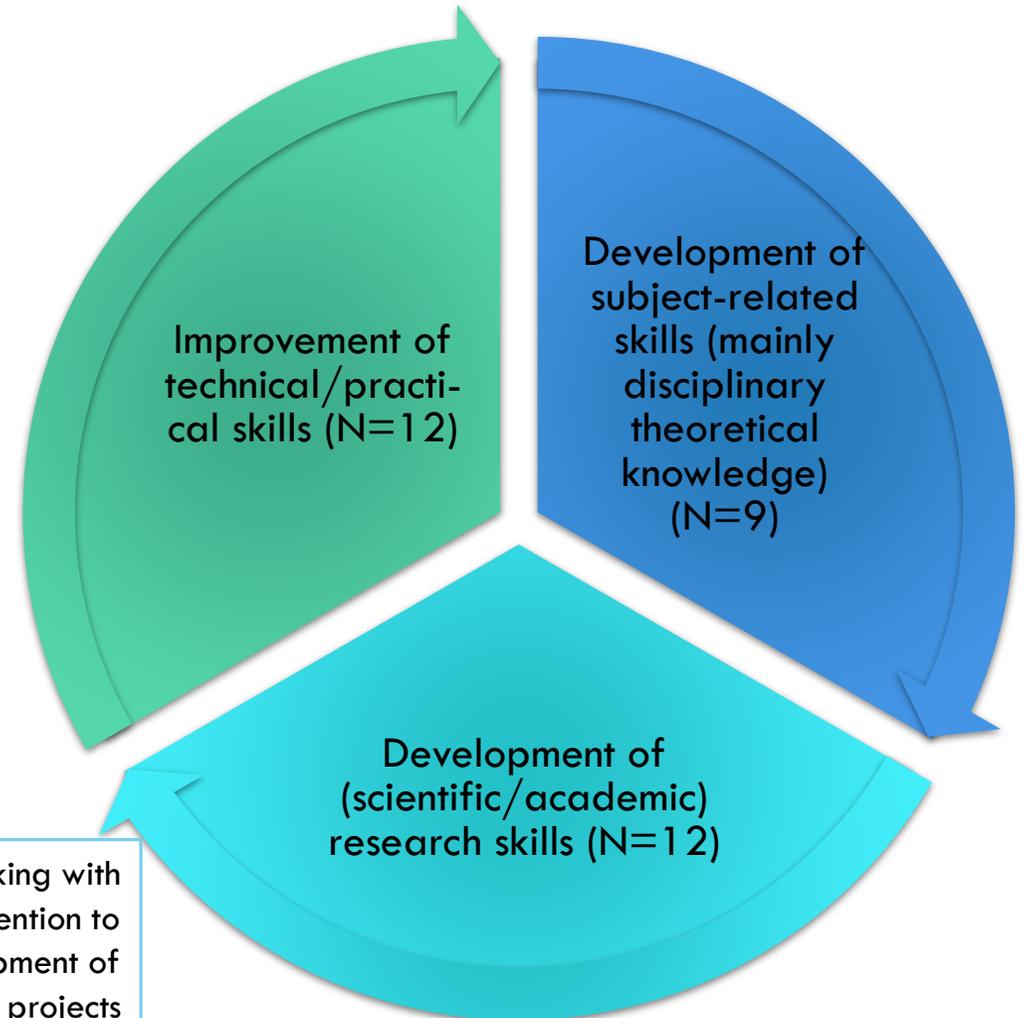
RESULTS FROM THE INITIAL SURVEY (I)

Students' generic characteristics – 1st semester

- 15 undergraduate students (F=6; M=9) started their research activities in the 1st semester

- There are enrolled in several courses (Bachelor with honours=11; Masters=2; other=2):
  - (i) 5 students in Computer Science (one of which with industry experience); (ii) 5 students in Dentistry; (iii) 2 students in Electronic Engineering; (iv) 1 student in History; and (iv) 1 student in Biomedical Sciences

- The majority (N=9) are in the 2nd year of the programme; only 4 students are in the 3rd year

- Their age range varies from 19 to 34 years old (average=23.33)

RESULTS FROM THE INITIAL SURVEY (II)

Students' expectations of their own competences' development

Improvement of technical/practi-cal skills (N=12)

Development of subject-related skills (mainly disciplinary theoretical knowledge) (N=9)

Development of (scientific/academic) research skills (N=12)

Such as: literature search and review, ethical procedures, team work, networking with experts in the field of the project, communication skills, problem solving, attention to detail, independent work, and administrative skills related to the development of research projects

RESULTS FROM THE INITIAL SURVEY (III)

Students' expectations of the relevance of the research experience for themselves

Enhancement of technical skills (N=10)

By participating in 'real life' work/experience, although this will be developed in a research context.

Additional support for current studies (N=6)

Broadening their knowledge in a subject (N=9)

This might also have impact on their future in research: by preparing them for the final year project, and even by opening the possibility of going further to postgraduate studies (both at Masters and PhD levels) (N=4).

Positive impact on their professional future, by opening working possibilities (N=10)
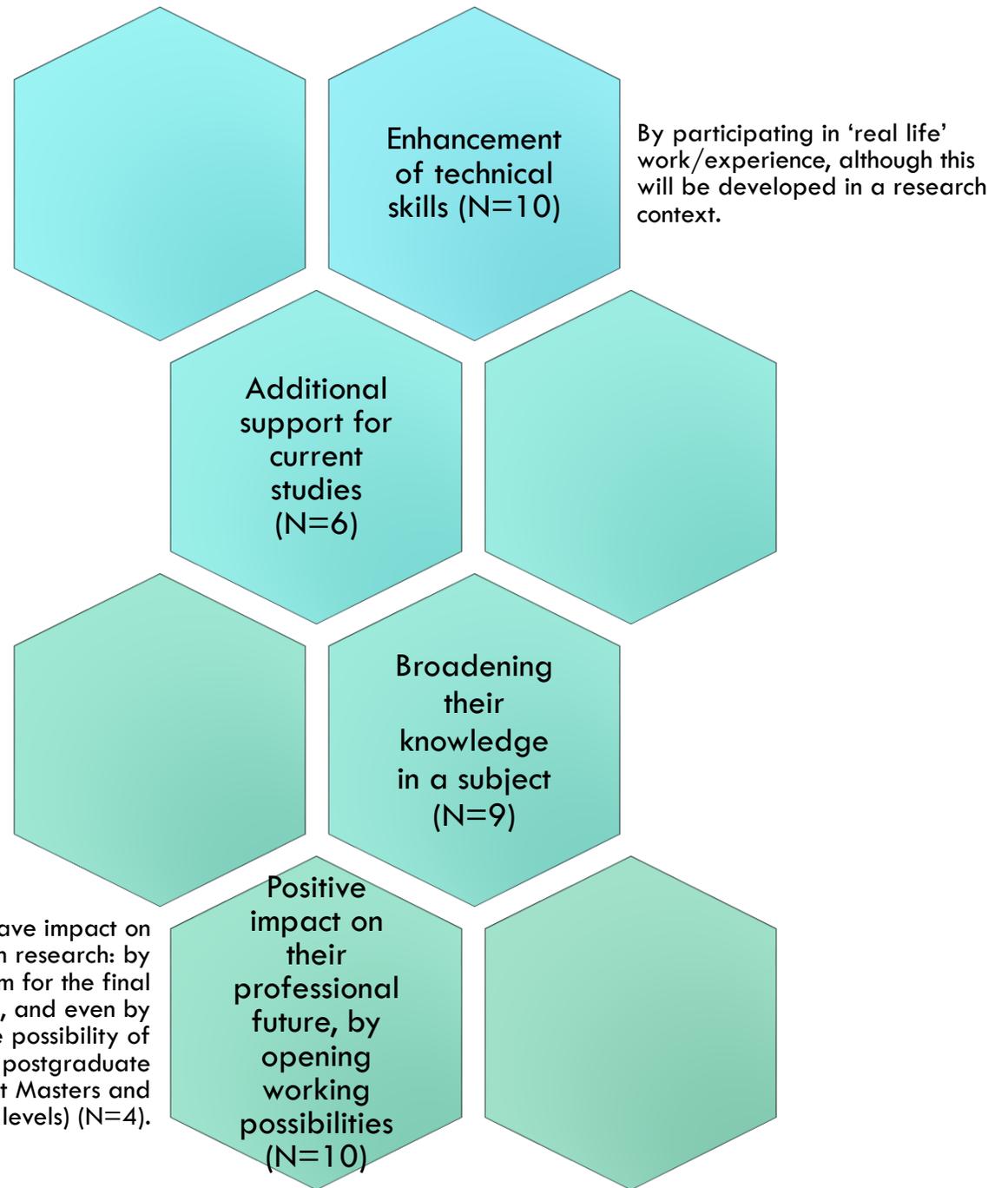
RESULTS FROM THE INITIAL SURVEY (IV)

Academics' generic characteristics – 1st semester

- 6 academics involved as leads (F=3; M=3)

- The length of academic career (in years) varies between 2 (the minimum) and 35 (the maximum)
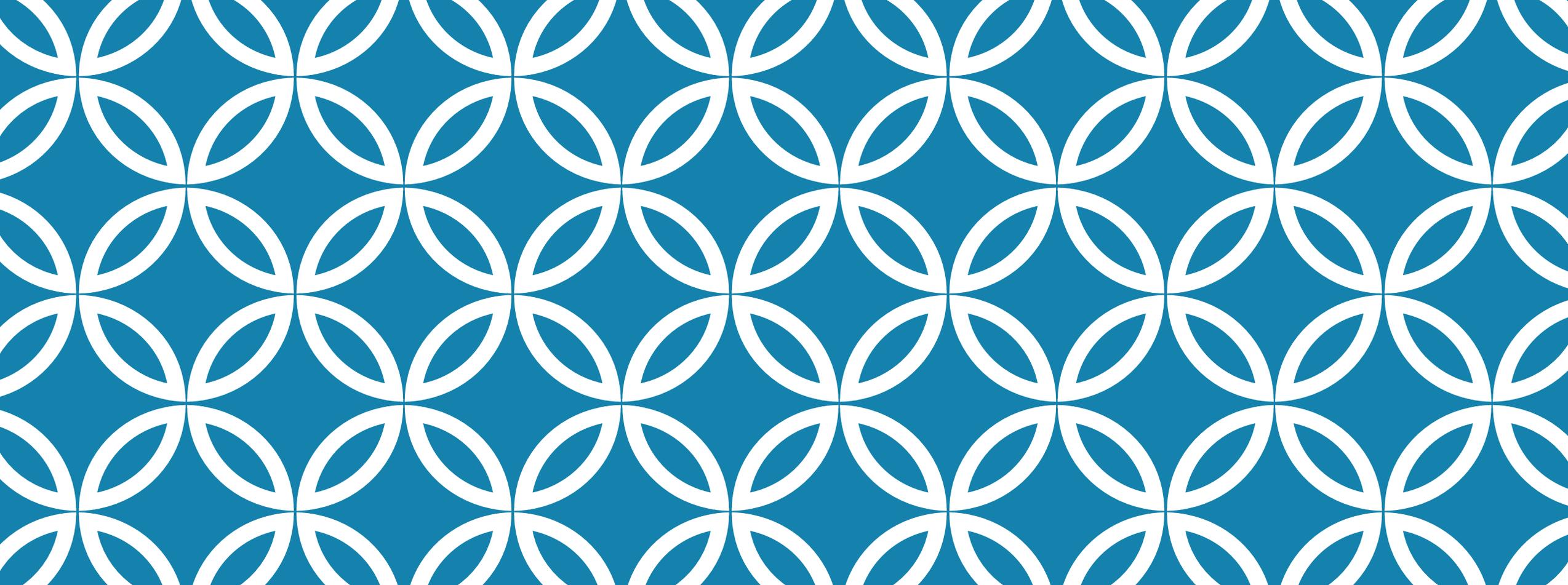
RESULTS FROM THE INITIAL SURVEY (V)

Academics' expectations of the relevance of the research experience for themselves

- The interaction and collaboration with motivated undergraduate students will be an additional support for the research they are carrying out (N=4). The work will be done more efficiently.

- This experience will help them to be more articulate and more effective in communicating the project: they will be dealing with students' queries, difficulties and doubts (N=3).

- Opportunity to find future collaborations with students that may want to pursue postgraduate studies in a near future (N=2).

- At a more personal and professional level, there are 3 academics whose answers have been more focussed on themselves.
  - Advantages for their academic development, mainly because this will help them (i) to be more self-reflective and open to challenges brought by the students, leading them to become better teachers and researchers, (ii) to gain experience in one to one undergraduate supervision, namely by developing leadership and management skills, and (iii) to better communicate with students and motivate them.

FINAL QUESTIONS

- Are you surprised with the results? Were you expecting to find (or not to find) some aspects?

- Why haven't we found motivations and expectations more focused on personal achievement and competences? To what extent is there a 'divide' between intrapersonal and academic competences and experiences when talking about research and why?

- QResearchers Project is an institutional pilot project. What arguments would you make at an institutional level for continued investment?

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