



D.2.1 Definition of Research Methodology & Identification of DELPHI Panel

WP2 Scenario Building for Micro-Credentials in Europe



Authors

Ira Sood, Henri Pirkkalainen

Editors

Ira Sood

Layout

Tara Drev

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Duale Hochschule Baden-Württemberg Heilbronn	DHBW	DE
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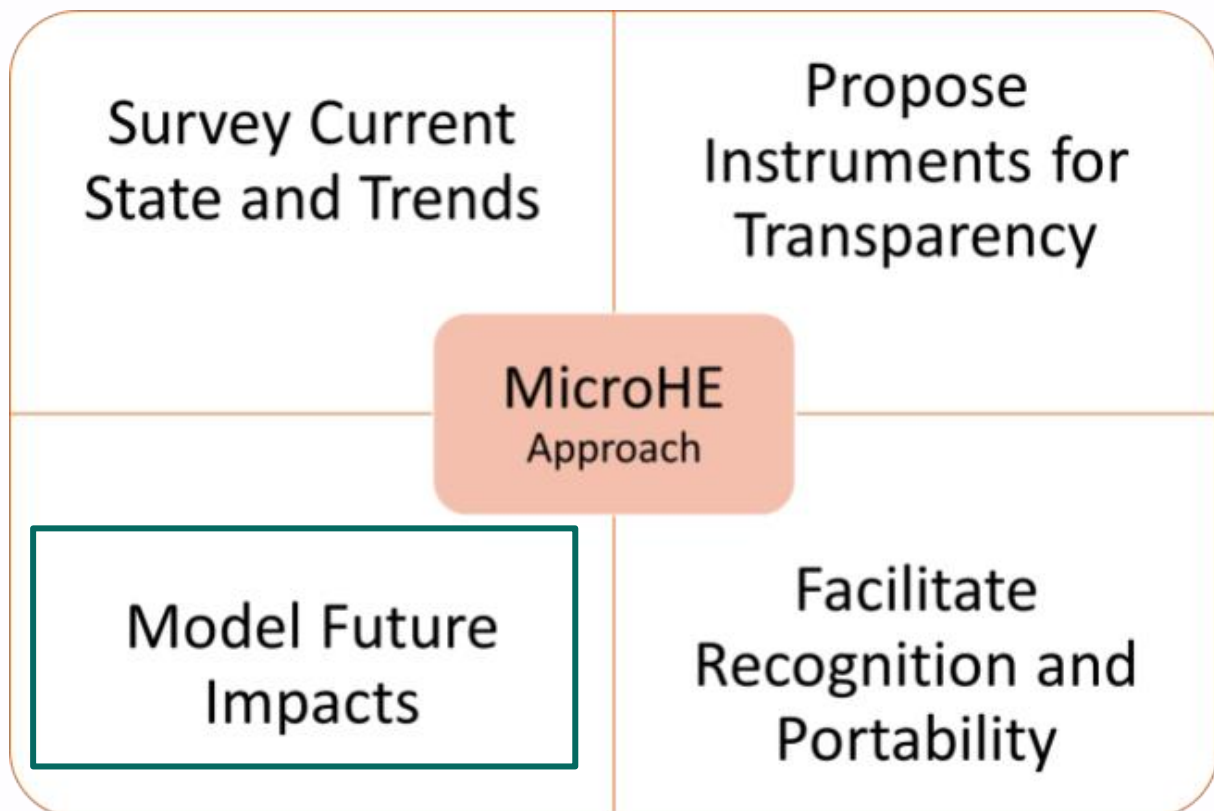


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1 Introduction

One of the main goals of MicroHE is to contribute to the current research on modularisation of higher education throughout Europe. The project aims to provide *the most comprehensive policy analysis of the impact of modularisation, unbundling and micro-credentialing on Higher Education in Europe yet conducted*. The use of forward scanning techniques has been identified as a method to forecast the impacts of continuous modularisation on higher education.



1. MicroHE Approach based on 4 Pillars

This report will specifically handle the highlighted quadrant which forms one of the four pillars of the MicroHE project. With the advent of microcredentials in the HE landscape, their impact on the different aspects of education (such as structure of qualifications, assessment methodologies, pedagogy, policymaking and so on) is far from clear. Hence, MicroHE employs a simple forecasting exercise to obtain expert insights on how that change will unfold in the next few years. The technique used in the task employs a distinct combination of three methods :

- Delphi Surveying
- Future Wheels
- Scenario Building

This report will cover the Delphi methodology employed in this process. The research methodology will further break-down the main research question of "How will further

modularisation of education impact Higher Education Institutions in five to ten years from now?”, dividing this question into sub-areas looking at pedagogy, organization of education, modes of provision, impact on the wider community, competition from new providers, etc. It will also explicitly define how these questions will be developed over the four rounds of the DELPHI.

The task leader will make use of the stakeholder analysis supplemented by information collected from participants in the survey, it will identify a panel of experts to participate in the survey. The Delphi will commence at the Microcredentials Masterclass organised by the consortium. The following sections will expand on the basics of a Delphi research methodology followed by an explanation of its use in MicroHE project.

2 Evolution of Delphi Process

RAND Corporation, the forebearers of Delphi methodology defined it as a method for 'eliciting and refining group judgements'¹. Linstone & Turoff characterized it as a 'method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem'².

Over the years the use of Delphi methodology has evolved from being employed in defense research in the 50s by the American Air Force³, to being used in technological research and development forecasting and further penetrating into governance, environment, healthcare and finally academia.

In practice , it has been used when one or more of the following conditions arise¹:

- The problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis
- The individuals needed to contribute to the examination of a broad or complex problem have no history of adequate communication and may represent diverse backgrounds with respect to experience or expertise
- More individuals are needed than can effectively interact in a face-to-face exchange
- Time and cost make frequent group meetings unfeasible
- The efficiency of face-to-face meetings can be increased by a supplemental group communication process
- Disagreements among individuals are so severe or politically unpalatable that the communication process must be refereed and/or anonymity assured

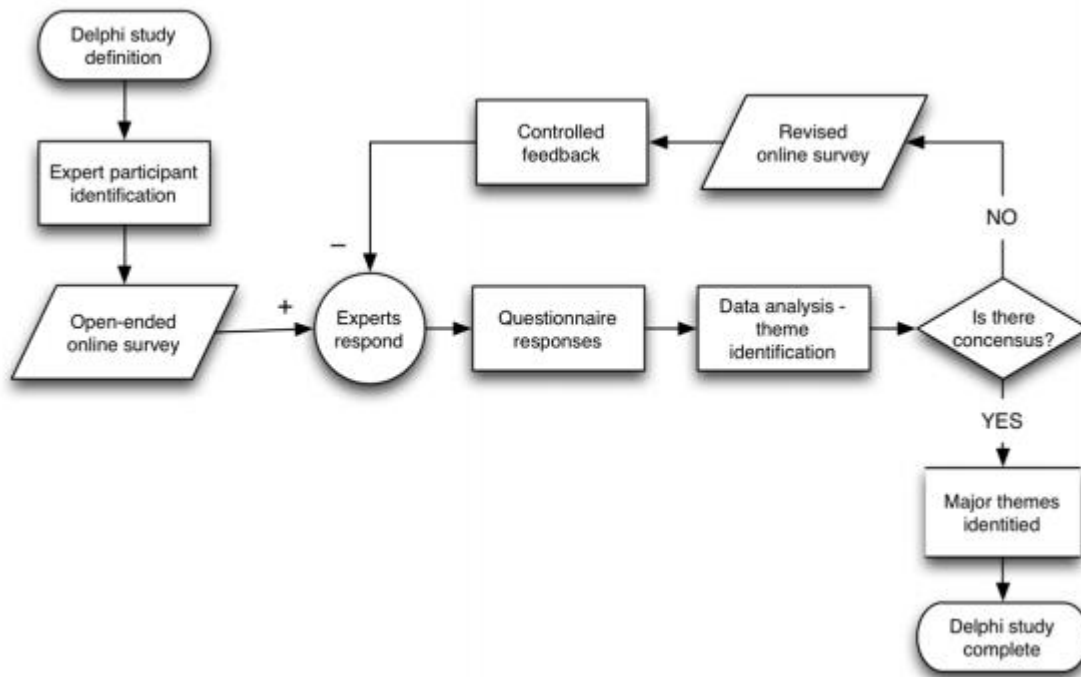
¹ Dalkey, N.C., Brown, B.B., and Cochran, S. (1969) The Delphi Method: An Experimental Study of Group Opinion, RAND Corporation, Santa Monica, CA

² Linstone, H. A., & Turoff, M. (Eds.). (1975). The delphi method (pp. 3-12). Reading, MA: Addison-Wesley.

³ N. Dalkey and O. Helmer (1963). An Experimental Application of the Delphi Method to the Use of Experts. Management Science 9, p, 458.

- The heterogeneity of the participants must be preserved to assure validity of the results, i.e., avoidance of domination by quantity or by strength of personality ("bandwagon effect")

A need to modify the Delphi methodology from its simplest form to fit the circumstances has often been the case which has led to the development of modified methods such as Policy Delphi⁴, Spatial Delphi⁵ Hybrid Delphi⁶ and Real-time Delphi⁷ among others. In the most comprehensive form of a Delphi study, the basic steps that need to be followed are as shown in figure 2 below.



2. Schematic Representation of a Delphi Study⁸

Based on existing research the main steps involved in a Delphi study can be compiled into a checklist :

⁴ Turoff, M. (1970) The design of a policy Delphi. Technol. Forecast. Soc. Change, 2, 149–171

⁵ Zio, S.D. and Pacinelli, A. (2011) Opinion convergence in location: a spatial version of the Delphi method. Technol. Forecast. Soc. Change, 78, 1565–1578.

⁶ Landeta, J., Barrutia, J., and Lertxundi, A. (2011) Hybrid Delphi: a methodology to facilitate contribution from experts in professional contexts. Technol. Forecast. Soc. Change, 78, 1629–1641

⁷ Hartman, F.T. and Baldwin, A. (1995) Using technology to improve Delphi method. J. Comput. Civil Eng., 9, 244–249

⁸ Skulmoski, G.J., Hartman, F.T. & Krahn, J. (2007). The Delphi Method for Graduate Research. Journal of Information Technology Education, 6 pp. 1–21

- Identify and develop the research question and analyse it both from a micro and a macro perspective^{8,9}
- Identify Delphi Panel¹⁰ carefully keeping in mind 1) knowledge and experience 2) capacity and willingness to participate 3) effective communication skills 4) homogenous sample
- Identify the number of rounds needed and the modes of interaction to be used
- Conduct an initial open ended survey
- Inserting controlled feedback by informing the participants of other participant's perspectives
- Allowing the participants to refine their views in light of the progress of the group's work from round to round
- Statistical aggregation of group response and publication

Although an effective methodology, some factors can cause a breakdown of the Delphi process. The moderators must stay away of these commonly observed pitfalls as identified by Linstone and Turoff³. Firstly, overspecifying the structure of the Delphi with no room for insertion of varied perspectives related to the problem other than those identified. This might in turn impose the views and biases of the moderator upon the panel. Secondly, poor techniques of summarising and presenting the group response might create a snowball effect and cause the whole process to derail. Thirdly, ignoring and not exploring disagreements might push dissenters to drop out leading to the creation of an artificial consensus. One of the commonly overlooked problems is underestimating the demanding nature of a Delphi and the fact that panelists should be recognised as consultants and properly compensated for their time if the Delphi is not an integral part of their job function. Lastly, Buschmann¹¹ identified the optimism-pessimism bias (bias towards over-pessimism in long range forecasts and overoptimism in short range forecasts) as one of the issues with forecasting methods.

3 Delphi Research Methodology in MicroHE

European Modified Delphi study

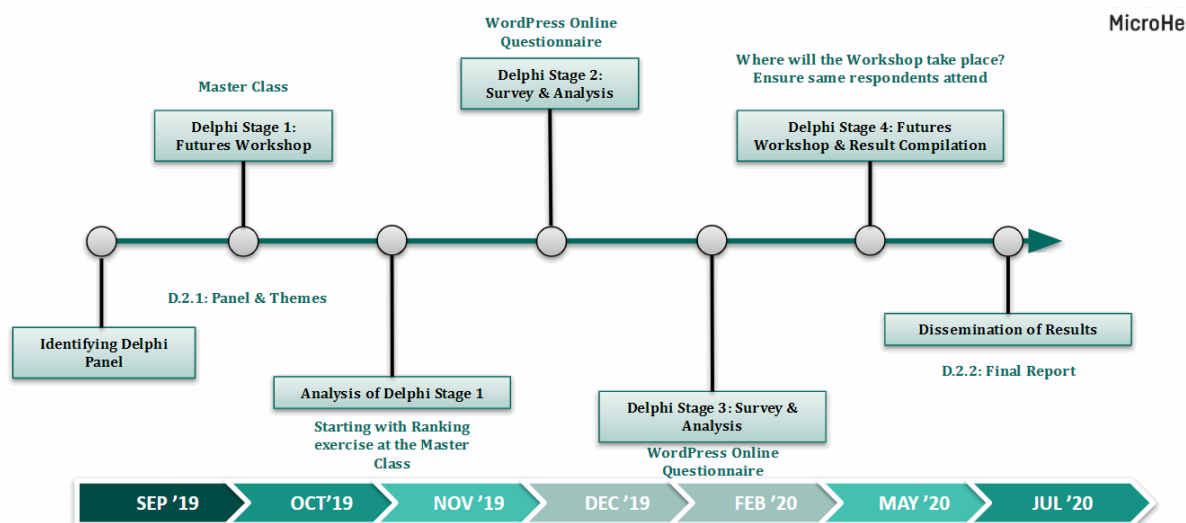
As stated before, the goal of the European Delphi as covered under the scope of MicroHE is to breakdown the main research question of “How will further modularisation of education impact Higher Education Institutions in five- ten years from now?”, dividing this question into sub-areas looking at pedagogy, organisation of education, modes of provision, impact on the wider community, competition from new providers and so on. It was decided that the Delphi

⁹ Prescott, P. & Soeken, K. (1989). The potential uses of pilot work. *Nursing Research*, 30, 60 - 62.

¹⁰ Mason, J. (1996). *Qualitative researching*. Thousand Oaks, USA: Sage Publications.

¹¹ R. Buschmann (1969). Balanced Grand-Scale Forecasting. *Technological Forecasting*, 1 p. 221.

would comprise of 4 rounds aimed at the four identified themes which will be expanded on in the next section.

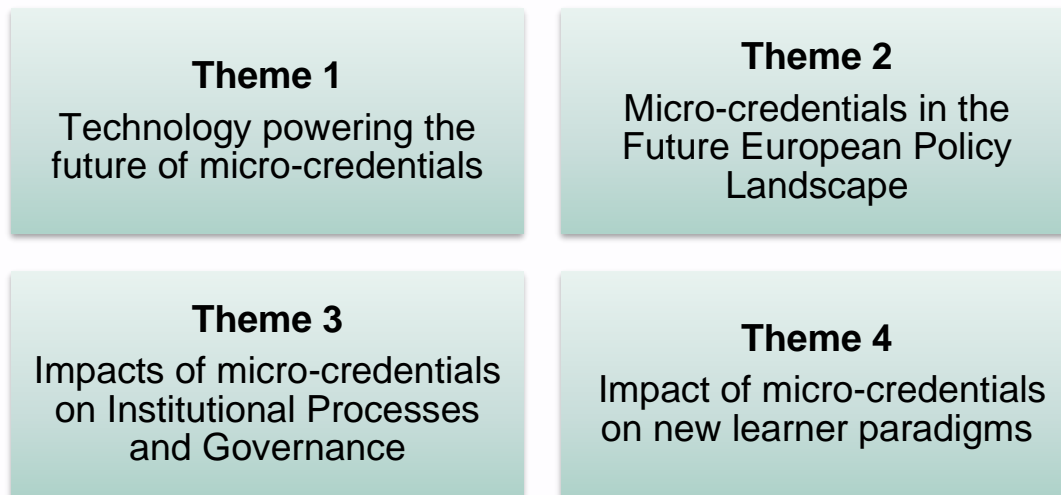


3. Delphi Timeline in MicroHE

Figure 3 shows an approximate timeline as identified by the consortium for the Delphi study. The first stage of the Delphi identified as a Futures Workshop will take place at the [Microcredentials Masterclass](#) in Bled, Slovenia which will be attended by experts in higher education and related fields from across Europe. The development of the initial impact statements from the respondents will also take place at the Masterclass. The first stage will be followed by a ranking exercise which will take place over the web due to time limitations at the Masterclass event. The statements will then be ranked in the order of importance as perceived by the panelists and resent in the form of an online questionnaire survey after analysis by the moderators. This will represent stages 2 and 3 of the Delphi study. The fourth and final stage will consist of another Futures workshop where the panelists will gather face to face to come to a final consensus and participate in a future scenario prediction exercise.

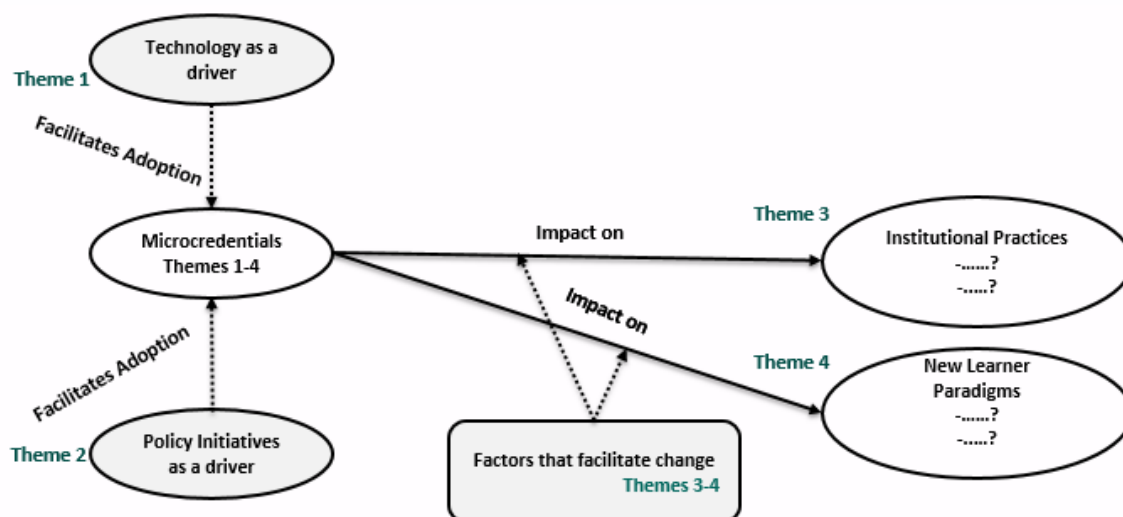
3.1 Identification of Delphi Themes

Based on the existing research in the area of microcredentials and their use in higher education, four main themes were identified to serve as the foundation for further discussion during the first futures workshop at the Masterclass as shown in figure 4 below. While the use of technology and European policy initiatives (current and future) were identified as the drivers that could facilitate the adoption of microcredentials into the mainstream, it was also considered crucial to understand the impact that microcredentials would have on the existing institutional processes and the emergence of new learner paradigms.



4. Delphi Themes

The main output of the Delphi process is to generate a fixed number of impact statements (applicable to the next 5-10 years) (Stages 1-3) that will be turned into future scenarios (Stage 4). It was important to formulate the statements in a coherent manner that would easily explain the concept being discussed. Respondents were also given some dos and don'ts on how to go about the process with moderators serving as facilitators during the process to guide the conversations in an appropriate manner. Based on the four themes, a Delphi methodology framework was developed as shown in figure 5 below to classify and understand the results from the process.



5. Delphi Methodology Framework

3.2 Identification of Delphi Panel

MicroHE consortium members have actively maintained a collaborative stakeholder list throughout the duration of the project. The list was constantly updated by all the members of the consortium and served as the central repository for experts in higher education and related areas as well as the expected level of their individual involvement in various tasks during the process. This Stakeholder list was based on the knowledge, backgrounds and expertise of these external participants.

Based on the Stakeholder analysis, supplemented by information collected from participants in the survey on micro credential adoption in Europe, DELPHI participants were selected to take part in the consultation and were invited to the Masterclass event to engage in the futures workshop.

3.3 Next Steps

Stage 1 of Delphi will begin with presentations from the invited experts linked to every particular theme that has been identified. Some of the planned sessions are as follows:

Theme 1: Technology powering the future of micro-credentials

National approach to open badges in higher education

Janina van Hees, Project manager educational innovation with ICT, SURF

Technology powering the future of micro-credentials: a view on Blockchain and Open Badges for Higher Education

Chiara Carlino, Consultant for Universities, CINECA

A European Infrastructure for Technology Collaboration

Lluís Alfons Ariño Martín, Universitat Rovira i Virgili, Tarragona, IT Director – CIO & co-Convenor European Blockchain Partnership' Diplomas & Credentials use case

Artificial intelligence, Blockchain & Analytics

John Domingue, Director of the Knowledge Media Institute at The Open University

Blockchain for Micro-Credentials

Urban Osvald – Oxcert

Theme 2: Micro-Credentials in the Future European Policy Landscape

Micro-Credentials for EU Skills and Employment Policies

William O'Keeffe – DG Employment European Commission

Enabling Collaboration between Universities for Digital Mobility

Joao Bacelar – European University Foundation

Micro-credentials' contribution to the future labour market

Rolf Reinhardt – LinkedIn Learning

Open Access through Unbundling

Zeynep Varoglu, Programme Specialist, ICT in Education Knowledge Societies Division Communication and Information Sector, UNESCO

Theme 3: Impacts of Micro-Credentials on Institutional Processes

Short-Learning Programmes of Common Microcredential Framework

Piet Henderikx, Senior Executive Advisor at EADTU

Short-Learning Programmes and their Impacts on the quality system of microcredentials

Denes Zarka, Director of MTI at Budapest University of Technology and Economics

Institutional Openness to Micro-Credentialling

Henri Pirkkalainen, MicroHE Project & Tampere University

Institutional Strategies for Micro-Credentialling

Sandra Kučina Softić, Assistant Director for Education and User Support, University Computing Centre University of Zagreb SRCE, President of Eden

Supporting Lifelong Pathways through a Credential Infrastructure

Ildiko Mazar, Knowledge Innovation Centre

Theme 4: Impact of micro-credentials on new learner paradigms

Didactical Innovation through Micro-Credentials

Elena Caldirola, Head of Innovation in Didactics and Digital Communication Unit, University of Pavia

Quality Assuring Micro-Credentials: A Student Centred Approach

Colin Tück, European Quality Assurance Register

Stackability for Student-Centred Learning

Maria Sticchi Damiani, Lead Author of the ECTS Users Guide

Recognising Micro-Credentials

Yasmine Wauthier, NVAO

Towards Flexible Work-Study Experiences

Jasmina Policnik, Skupnost VSS

The sessions will set up the stage for the workshop and serve as a good starting point for commencement of group discussions around the themes in smaller groups of experts. The

goal is for each group to come up with a number of impact statements that will consequently be ranked by the respondents in the order of priority and likelihood. The moderators would then collect and aggregate these statements and present it to the respondents in the form of a questionnaire survey to be further reflected on until a final set of statements is generated along with future scenarios.

4 Conclusion

The MicroHE partnership has set out to conduct a future-foresight exercise that utilises a raft of forecasting techniques, including modified DELPHI methodology, future wheels, scenario building and trend analysis, to map the likely impacts of micro-credentials on Higher Education Institutions, the sector and the wider society as a whole.

Along the implementation we intend to act as a laboratory where different policy actions may be tested in theory, with the aim of identifying effective levers to move the field towards desirable futures. The Delphi method is a flexible research tool which is well suited to fit the current predicament of estimating the impact of unbundling and the micro-credentialing movement on the future of higher education.



MicroHE

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MicroHE aims to *provide the most comprehensive policy analysis yet conducted of the impact of modularisation, unbundling and micro-credentialing in European Higher Education.*

In the long-term the project will increase the quality and quantity of micro-credentials on offer within the European Higher Education Area, as well as enable recognition of those same credentials by different educational organizations and employers.