

6 | Empowering university educators

How Q-sorting fosters adaptive expertise and professional development

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88

ABSTRACT Teaching is a complex and often unpredictable profession that requires both routine and adaptive expertise. Structured reflection might play a key role in developing adaptive expertise; however, opportunities for such reflection are not always embedded in professional development programmes.

In this chapter, we share our experience using the Q-methodology, both as a research tool and as a way to engage university educators in meaningful discussions about the challenges they face in their (innovative) teaching practice.

We conducted seven Q-sorting workshops with a total of N = 93 university

educators from various disciplines and countries, in which we invited participants to rank classroom challenges and reflect on their experiences. Our shared experiences, along with participant feedback, revealed that the Q-sorting method fostered rich conversations, supporting participants to gain new insights, exchange teaching strategies, and identify shared challenges. University educators reported in their feedback that the Q-sorting activity was engaging and insightful, highlighting the importance of structured reflection in professional growth.

We believe that integrating Q-sorting into teacher professional development programmes could provide a practical and engaging way to empower educators in transitioning from routine to adaptive

experts. Discussions around real-world teaching challenges can encourage both individual and collective learning, supporting educators to better navigate the complexities of their profession with confidence and flexibility.

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Introduction

Teaching is a complex profession (Flores, 2017), and becoming a teacher can be challenging in many ways, especially for those transitioning from content expertise to teaching. This shift often requires developing new skills, such as pedagogical strategies and classroom management, that go beyond subject knowledge. In teaching, flexibility and adaptivity are required almost every day. Yet, large parts of teaching require more routine expertise or become routine over time. For example, handling students who arrive late, managing disrespectful behaviour, or addressing common classroom disruptions often becomes second nature as teachers gain experience. These routines allow educators to focus their energy on more complex and unpredictable aspects of their work, such as tailoring lessons to individual needs or navigating challenging teaching moments.

In an ever-changing world, the need for adaptivity is becoming increasingly crucial across all professions, including education. In Higher Education, the development of adaptive expertise in students depends significantly on teachers who model flexibility and adaptivity

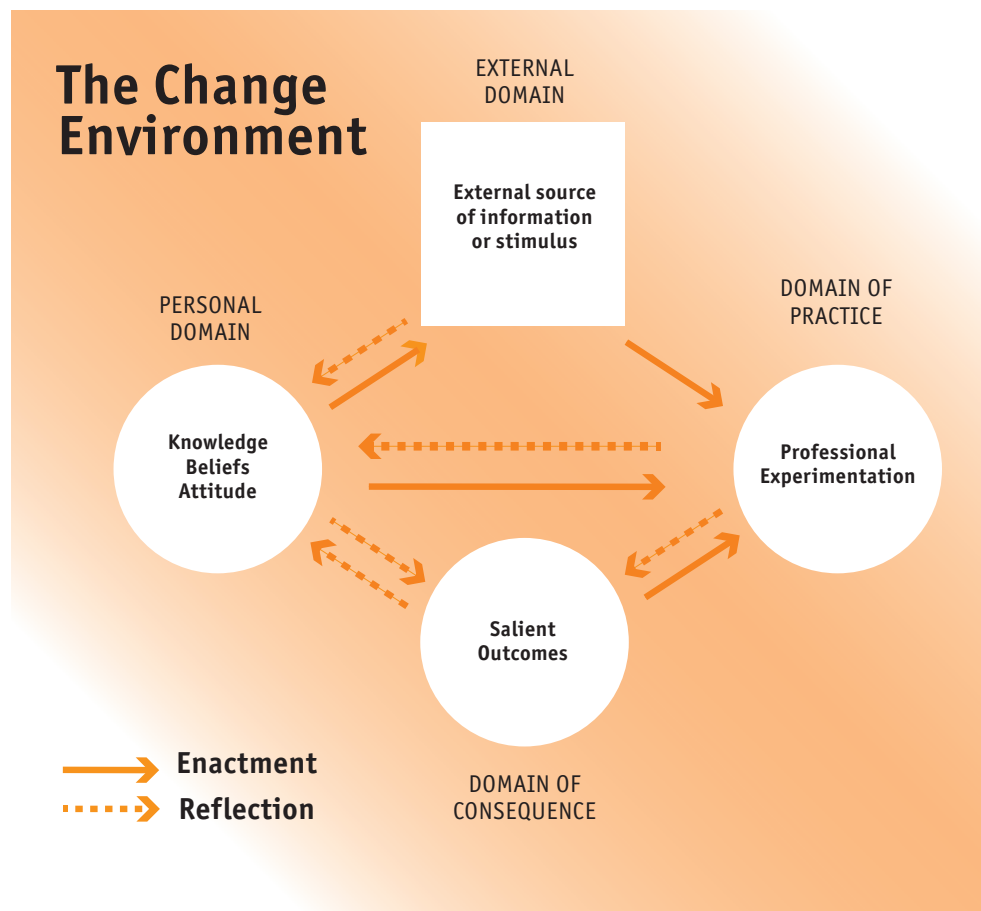


FIGURE 1 THE INTERCONNECTED MODEL OF PROFESSIONAL GROWTH (CLARKE & HOLLINGSWORTH, 2002)

in their teaching practices (e.g., Lunenberg et al., 2007; Moore & Bell, 2019). Adaptive expertise and adaptive performance are often considered interchangeable or, at the very least, closely related concepts (Bohle Carbonell et al., 2014; Kua et al., 2021). There is, however, a difference. In our research, we adhere to the definitions as provided by Pelgrim and colleagues (2022), stating that “adaptive performance is best referred to as the visible expression of an adaptive expert”.

In other words, adaptive performance is the observable behaviour that requires adaptive expertise to be demonstrated (Pelgrim et al., 2022). Adaptive performance is triggered by a ‘change’ that may be new to the world (e.g., COVID-19) or to the individual (e.g., experiencing teaching situations for the first time). How a person responds to this change depends on their level of maturity, which in our research refers to their professional development as a teacher.

Expertise is not innate; rather, it is cultivated through deliberate practice (Ericsson et al., 2018) and structured reflection, which help educators navigate the complexities of teaching in dynamic environments. As shown in Figure 1, Clarke and Hollingsworth’s Interconnected Model of Professional Growth (2002, p. 951) captures the intricate process of teacher development by emphasizing the interplay of enactment and reflection across four interconnected domains: 1) the personal domain (knowledge, beliefs, and attitudes), 2) the domain of consequence (teaching outcomes),

3) the external domain (institutional context), and 4) the domain of practice (professional experimentation). This model highlights that growth and change occur within a constantly shifting environment, underscoring the importance of reflective practices and deliberate efforts to adapt and evolve as educators.

However, what becomes routine and what still requires adaptive performance can vary significantly depending on a teacher’s career stage (Van Tartwijk et al. 2023). Competency frameworks for teaching in Higher Education, such as the UNITE framework by Van Dijk and colleagues (2022), highlight the importance of continuous professional development. These frameworks stress the need for a dynamic learning process that includes stage-appropriate challenges to foster adaptive teaching skills effectively.

The challenges faced by individual teachers are often highly personal, and there is limited knowledge about which situations are commonly regarded as challenging across the profession. To address this gap, we conducted a study using Q-methodology to explore the challenges university teachers regard as requiring adaptive performance and to examine whether these challenges differ between novice and more experienced university teachers. The goal of this chapter is twofold: to provide valuable insights into the application of the Q-sorting method for data collection and to demonstrate its potential for fostering personal and collaborative reflection on teaching practices, adaptivity, and professional development.

The Q-Sorting method

William Stephenson introduced Q-methodology in 1935 as a new, practical method that combines quantitative and qualitative methods to explore people's perspectives on specific topics, such as attitudes toward political ideologies or preferences in teaching methods (Bashatah, 2016). The foundation of Q-methodology is the idea of subjectivity, which is based on or influenced by individual opinions. This method aims to understand how individuals perceive a topic based on their unique experiences, values, and beliefs rather than measuring objective facts. By focusing on personal perspectives, Q-methodology captures the diversity of opinions on complex issues like teaching practices, healthcare policies, or social matters.

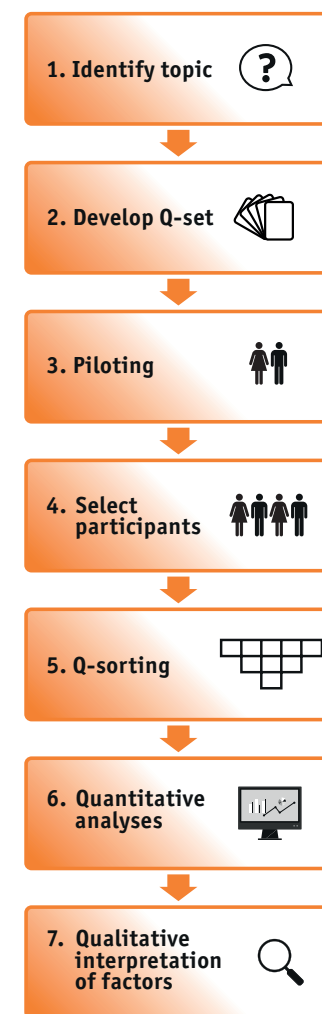
In Q-methodology, data is collected qualitatively but analysed statistically, blending qualitative depth with quantitative rigour. Unlike traditional tests, it correlates participants (P-set) based on their reactions, treating these as factors. The core tool of Q-methodology is the Q-sorting method, a structured framework where participants rank-order statements (Q-set) according to their firsthand experiences and beliefs (Jedeloo & Van Staa, 2009).

The Q-sorting process involves several stages, as presented in Figure 2 (Churruca et al., 2021, p.2). Designing the statements, known as the Q-set, is particularly critical to ensure relevance and clarity. Participants, ideally numbering between 40 and 60, sort the statements using a forced-choice distribution on a fixed quasi-normal grid (Bashatah, 2016). During or after sorting, participants often provide added input through think-

FIGURE 2 STAGES OF Q-METHODOLOGY, CHURRUCA ET AL. BMC MED RES METHODOL (2021) 21:125. P.2

aloud protocols or follow-up interviews to contextualise their choices and share their broader perspectives.

The quantitative analysis of Q-sets is done in specialised software, such as Q-method software (<https://qmethodsoftware.com>). The quantitative analysis underlying the Q-methodology is based on factor analysis. Regular exploratory or confirmatory factor analysis relies on identifying patterns in items of a questionnaire, through analysing correlations between these items. This type of factor analysis is referred to as the R-methodology (Morea, 2022). In Q-methodology, factor analysis is used somewhat differently. The analysis of Q-methodology relies on correlations between the entire Q-sets of the participants. Thus, instead of correlating each



statement with the other statements, it correlates the entire Q-set of statements to the other Q-sets (Morea, 2022). Based on all the correlations, several factors are extracted on which the Q-sets load. The factors with the highest factor loadings are selected based on significance levels and used to interpret the factors. Interpretation of the factors is mainly done through comparing distinguishing (i.e., statements significantly different between factors) and consensus statements (i.e., statements that are similar across factors; Morea, 2022).

Q-methodology has notable strengths. It offers a structured way to explore subjective viewpoints, allowing participants to express their perspectives without the constraint of *right or wrong* answers (Morea, 2022). The method encourages all voices to be represented and often fosters deeper reflection among respondents, who in general enjoy the interactive process.

Despite its origins a century ago, Q-methodology gained broader application around the turn of the millennium. It has been employed in diverse fields including politics (Brown, 1980, as cited in Bashatah, 2016), nursing research (Akhtar-Danesh et al., 2008), and healthcare research (Churrua et al., 2021). It has also been used to investigate the hidden curriculum in clinical workplaces (Mulder et al., 2019). However, to our knowledge, it has not yet been applied specifically in teacher development programmes, offering an opportunity to explore its potential in this context.

Q-sorting workshop

92

In our research, we used Q-methodology to explore which challenges university teachers identify as requiring adaptivity and out-of-the-box thinking and whether these challenges differ between novice and experienced educators. Through interviews with experienced and novice university teachers combined with our own experience as teachers, we identified 23 common challenges in teaching practice. These were then formulated as statements in the Q-set. The cards in the Q-set were double-sided and presented the statements in English on one side and Dutch on the other side for participants to choose their preferred language. A few examples of statement cards are presented in Table 1 (p.93).

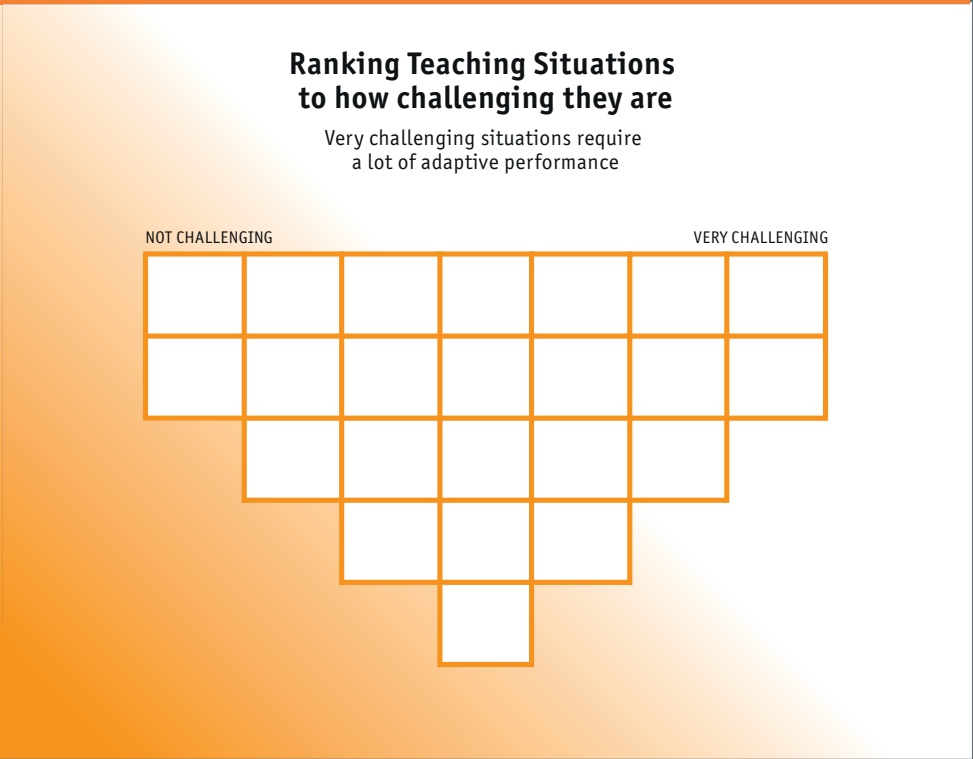
The Q-method was implemented in a workshop setting, beginning with a brief presentation (≈15 minutes) on our research and the concept of adaptive expertise. Teachers were then asked to prioritise the 23 situations based on how challenging they found them individually. This was done by sorting cards (in silence) on a grid (≈20 minutes), with “not challenging at all” and “very challenging” as the end points in the grid, see Figure 3 (p.93). The grid required participants to choose two situations as the most challenging and two as the least challenging.

As a last step, participants discussed their rankings in small groups (≈20 minutes), reflecting on the similarities and differences in their choices and explaining why they found certain situations more challenging than others (see Figures 4 and 5 (p.95)). This exercise

TABLE 1 EXAMPLES OF THE STATEMENTS IN THE Q-SET

Statement card
■ A student gets angry during group work and leaves the room smashing the door.
■ A student enters class with a plate of hot food and starts eating very noisily.
■ A student asks a question beyond the content expertise of the teacher.
■ During online teaching, Teams loses the connection. Students post disrespectful content via an online voting tool during class.
■ One student does not collaborate on the group assignment.
■ Due to the noise of construction works nearby students cannot hear you.

FIGURE 3 Q-SORTING GRID USED DURING WORKSHOPS



encouraged reflection on which teaching activities and challenges require adaptive expertise. Through shared experiences, participants revealed whether they had encountered the situations and how they had responded.

The workshop concluded with a plenary wrap-up (≈ 15 minutes) where we collaboratively narrowed the challenges down to a top 5 list. This list aims to serve as a foundation for developing training scenarios to support teachers in tackling these challenges and improving their (future) teaching practice.

The workshop was facilitated by members of the research group who were also expert trainers. We documented the individual rankings using photographs of the grids and recorded the subgroup discussions. Participants provided demographic information, including their professional role (e.g., teacher, policymaker), age, years of teaching experience, and the country in which they teach. During the introduction, we presented a QR code and asked participants to sign the informed consent form, granting permission to use their data.

In conducting the first Q-sorting workshops, we aimed not only to collect data but also to observe how the method could foster reflection among participants on their teaching practices. The first group of 33 participants varied in their teaching experience, ages, and perspectives (teacher, educationalist, etc), but all were involved in Health Professions Education, with a shared passion for teaching. The second group of 11 participants varied in teaching experience, age and country but shared the perspective

of being a teacher in Higher Education. In total, we conducted seven workshops with a total of $N=93$ participants.

Our experience and lessons learned

From both the collected data and the workshop experience, we learned that Q-sorting serves not only as a data collection instrument but also as a powerful tool that can guide teachers through both individual and shared reflection on their teaching practices. As outlined in the literature and presented in chapter 1 of this book, adaptive expertise and adaptive performance are crucial for navigating the unpredictable aspects of teaching (Pelgrim et al., 2022), and our findings aligned with this. However, while some situations certainly require flexibility and adaptability from the teacher, to call that adaptive performance may be going a bit too far.

Insights from participants' reactions

The Q-sorting exercise allowed teachers to reflect deeply on what they find challenging in their teaching and helped them uncover personal insights into their teaching practices. This might not happen in traditional teacher development sessions. For example, one participant shared how they struggled with balancing diverse student needs in large classes, which was something they had never discussed in detail with colleagues before.

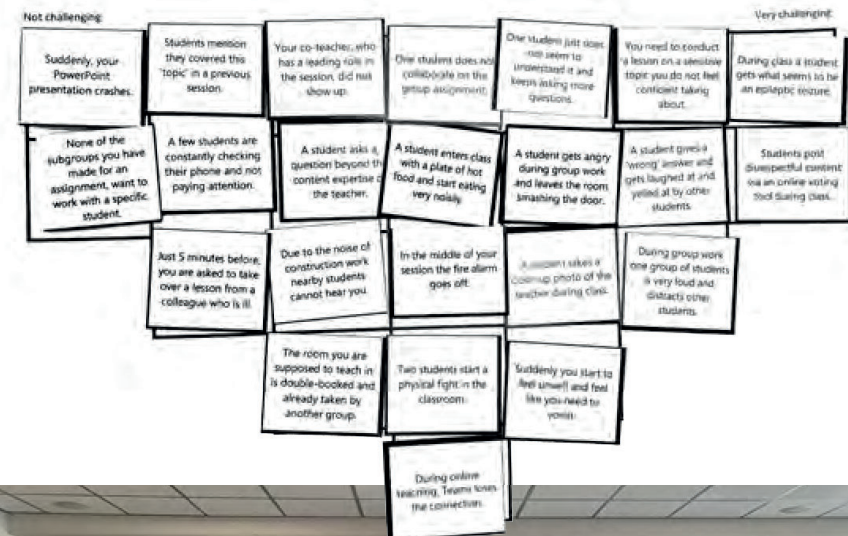
Through the sorting process, they were able to prioritise this challenge and later reflect on strategies for addressing it. Or, as another example,

one participant realised that they considered a situation of a physical fight not challenging in the former psychiatry workplace when being a nurse, but very challenging in the role of the teacher if it concerns two students in a classroom.

Through Q-sorting, participants not only named what they found most challenging in their teaching but also engaged in meaningful conversations with peers about how to address these challenges. For instance, several participants reported how they felt comforted by the fact that other colleagues faced similar challenges and insecurities around those situations linked to their responsibilities as teachers. Automatically, the more experienced teachers started to advise starting teachers while sharing their stories.

These kinds of insights represent the ongoing professional development that structured reflection facilitates (Clarke & Hollingsworth, 2002), supporting the development of adaptive expertise as teachers learn to tackle unforeseen challenges.

Besides the valuable personal insights that participants obtained from the individual part of the Q-sorting exercise and the supportive discussions in the shared reflection, participants also experienced Q-sorting as 'fun to do'. Which we believe is a very positive sign if you want to use Q-sorting not only as a research tool but also as an instrument to involve teachers in structured reflection activities to further develop their (adaptive) expertise.



FIGURES 4 AND 5 FIRST WORKSHOP USING Q-SORTING.
NVMO-CONFERENCE 2024, NETHERLANDS (OWN PHOTOS)

The dual role of Q-sorting: Research and professional development tool

Developed as a data collection instrument, Q-sorting should, in the first place, be considered a research method. But combining the sorting exercise with discussion among peers turns it into a professional development tool that can help start a shared reflection.

This shared reflection process can be stimulated by giving participants clear questions to address within their group discussions. For example, we asked them to discuss the two situations they ranked most challenging and explain to each other why they consider those to be so challenging. This helped participants to reflect and to engage in discussions with peers and automatically evolved into sharing firsthand experiences with situations like those on the cards and providing tips and tricks to each other, as mentioned before.

If challenges are addressed in the regular professional development of teachers, like trajectories for obtaining teaching qualifications, they often derive from topics like the use of didactic approaches or constructive alignment issues. Addressing firsthand experiences with challenges in classroom management or student interaction is not always common. Using a Q-sorting exercise, for example, with a smaller Q-set and varying cards, can stimulate shared reflection and maybe turn it into the 'good habit' of ongoing reflective process like Ericsson and colleagues (2018) mentioned.

When used with discussing the results among participants, the Q-sorting method goes beyond a data collection method. It can be a valuable instrument for future faculty development to stimulate shared reflection among teachers about their teaching practices.

Conclusion

Student curricula are increasingly moving in the direction of collaborative learning, providing new challenges for teachers. Current teacher development offerings often focus on dealing with common situations in teaching and things a teacher can prepare in advance. To become adaptive experts in education, teachers must navigate unforeseen challenges beyond their routine responsibilities, requiring innovative professional development efforts.

The Q-sorting method offers a structured framework for teachers of varying experience levels to guide both individual and shared reflection on their teaching practices. Incorporating regularly structured shared reflection moments using tools like Q-sorting in faculty development programmes might help teachers foster the development of their (adaptive) expertise in teaching.

Authors note

For writing this chapter, we were inspired by the Personal View article format of the Journal *Medical Teacher*, which is an article type that presents and reflects the authors' firsthand experiences or viewpoints on a relevant topic.

Ethical approval

The present study received approval from the Ethics Review Board of the Faculty of Social and Behavioural Sciences at Utrecht University under number 23-0430 in November 2023. All participants provided written informed consent to take part in this study.

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