Do-Be-Feel-Based Motivational Goal Modelling in Design Thinking Education: A Qualitative Case Study

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Abstract

This qualitative case study examined how students in a design thinking course perceived Do-Be-Feel-based motivational goal modelling compared with personas and journey maps in the early service design phase, with a particular focus on problem definition and user understanding. In this study, early user insights were first elicited using commonly employed design thinking techniques and were subsequently structured through motivational goal modelling. The study involved two separate student projects with a total of seven student participants. The dataset comprised the produced artefacts, including Do-Be-Feel inputs and motivational goal models, and participants' feedback, collected through a questionnaire and a focus group summary. The artefacts and the feedback were analysed using thematic analysis.

The findings indicated that the method functioned as a synthesising bridge alongside personas and journey maps: it integrated early insights into a consolidated model for each project and made relationships explicit between roles, service steps, quality goals, and emotional or value-related softgoals. According to the participants, the method (1) rendered emotional goals clearly articulable and discussable, (2) strengthened role-based reasoning in multi-stakeholder services, and (3) produced a reusable communication artefact. Reported limitations included initial ambiguity in classifying Do-Be-Feel statements and the effort required to translate lists into a coherent hierarchical model; perceived support for next-step planning varied with the maturity of the teams' prior artefacts. Overall, the method appears to strengthen early-phase synthesis when supported by templates or guided steps and followed by validation of emotional goal labels.

Keywords

Design thinking, motivational goal modelling, Do-Be-Feel, qualitative educational case study

1. Introduction

Motivational goal modelling has been used in the early design phase to structure user insights, such as goals, roles, emotions, and human values, into explicit artefacts [1, 2, 3, 4, 5, 6, 7, 8, 9]. Although existing qualitative and case-based studies suggest that motivational goal modelling is beneficial, empirical evidence remains limited regarding (i) how the approach fits design thinking education and (ii) what specific value it adds when used alongside common design thinking artefacts.

In design thinking practice, particularly in service design, early insights are most often synthesised into personas, empathy maps, and customer journey maps. While these artefacts support narrative sensemaking, they frequently leave role-specific emotional and value-related goals implicit and only loosely connected to concrete service activities. As a result, emotional goals are harder to treat as explicit design targets, justify prioritisation, and plan validation activities, and early-phase insights are rarely formalised into goal models that integrate roles, emotions, and human values.

This study examines motivational goal modelling based on the Do-Be-Feel requirements elicitation and co-design method [10, 11] as an early-phase synthesis technique in design thinking education. The models were developed in a co-design workshop with first-year design thinking and service design students by translating Do-Be-Feel outputs into motivational goal models. We address the following research questions (RQs):

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RQ1: How does Do-Be-Feel-based motivational goal modelling support early-phase synthesis in design thinking education?

RQ2: How do the usefulness and limitations that participants report for Do-Be-Feel-based motivational goal modelling compare with those of personas and journey maps?

The paper is structured as follows. Section 2 reviews a brief overview of the two focal concepts—design thinking and motivational goal modelling. Section 3 describes the case study design, workshop procedure, and analysis; Section 4 presents the findings; and Sections 5 and 6 conclude and outline future work.

2. Status of the underlying concepts

2.1. Design Thinking

Design thinking is a user-centred, iterative approach for addressing complex problems, often described as wicked problems, through exploration, reframing, and experimentation in multidisciplinary teams [12, 13]. Across common frameworks, the process alternates between divergent and convergent work: teams first broaden their understanding of people and context and then narrow it into a problem definition that guides later solution development [12, 14, 15].

Design thinking shares a common set of principles, but it is described through different process frameworks. In the literature, these processes are usually presented as three to five phases that guide teams from problem exploration to solution implementation [12, 13, 14]. The labels and level of detail vary, but the intent is the same: to structure user-centred creative work in a repeatable way.

A widely used model of design thinking is the British Design Council's Double Diamond [15]. It frames design work as alternating divergence and convergence across four stages: Discover, Define, Develop, and Deliver. The model emphasises expanding understanding before narrowing into a problem definition and only then moving into solution development, while keeping iteration and collaboration central.

Other common design thinking models use similar logic with different phase sets. IDEO and Human-Centered Design typically include three phases: Inspiration, Ideation, and Implementation [16, 17, 18]. The d.school model uses five stages: Empathize, Define, Ideate, Prototype, and Test [17, 19], and IBM's model uses three: Observe, Reflect, and Make [17, 20]. Despite structural differences, these frameworks converge on user focus, iteration, interdisciplinary collaboration, and seek a balance between exploring broadly and narrowing decisions.

In practice, design thinking rarely follows a strict linear sequence. Activities overlap, teams iterate across phases, and there is no consensus on which tools belong to which phase [21, 22, 23, 24, 25]. The choice of methods and their timing is often left to the designer's discretion, depending on the specific project and service context [23]. At the beginning of the process, the focus is on understanding the situation and defining a design intervention, using methods that support synthesis and sensemaking [26, 27]; see Appendix A (online supplementary material) for the most commonly used methods and tools in the initial stages of the design thinking process.

There is no product, system, or other offering without a service, and vice versa. For this reason, this study uses a service design context, where experiences are shaped across multiple roles and touchpoints. [28, 29, 30] This makes the quality of early synthesis especially important: teams need to connect role-specific needs, including experience-related goals, to concrete service activities.

2.2. Motivational goal modelling

Motivational modelling elicits and represents requirements for socio-technical systems as goals that the system should support or achieve. It integrates stakeholder roles, functional goals, quality goals, emotional goals, and optionally human values into a single view [2, 8, 10, 11, 9]. Motivational goal modelling refers to representing user requirements as hierarchical goal models in which a system's high-level purpose is refined into sub-goals and linked with roles, quality goals, emotional goals, and

human values; the model's core structure is a tree of functional goals, while the other goal types – quality and emotonal goals – are attached at appropriate levels of the hierarchy. The models are intentionally lightweight, avoiding excessive formalism, such as AND/OR decomposition, in order to remain understandable and to function as boundary objects in discussions with non-technical stakeholders [10]. Boundary objects are simplified artefacts that different stakeholder groups can use as a shared discussion basis despite differing interpretations [31]. This supports early-stage collaborative problem framing and shared sensemaking.

The approach originates from agent-oriented software engineering [1, 32, 33], where early requirements analysis focuses on roles and goals [33, 34]. It was later extended through people-oriented software engineering (POSE) to include emotional goals as a distinct goal type, separate from functional and quality goals [2]. Emotional goals make explicit how a person enacting a role should feel when using the system and can be linked to roles and functional goals, enabling emotional requirements to be discussed and traced alongside functional and quality considerations [4, 5, 10, 35, 36]. This explicitness supports connecting affective experience to concrete design deliberations rather than leaving it as informal background. Emotional goals have also been related to modern emotion theories [4, 37].

In practice, motivational modelling combines elicitation and representation. Goals can be derived from interviews and fieldwork and complemented by artefacts such as scenarios and role models [2, 3, 5]. Another common elicitation technique is a Do-Be-Feel-Who workshop, where stakeholders produce lists under four headings [10, 11]. Do goals map to functional goals, Be goals to quality goals, Feel goals to emotional goals, and Who captures stakeholder roles. The lists are then synthesised into a motivational goal model by aligning interpretations, resolving duplicates and ambiguities, and organising the goals into a coherent hierarchy. Wording guidance is typically used to support readability: functional goals as verb-led actions, quality goals as attributes, and emotional goals in the form "I want to feel...". [10] Figure 1 summarises the notation used in this study.

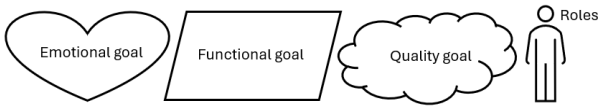

Figure 1: Notation for motivational goal models [2]

Reported benefits relate to both content and communication. By treating emotional requirements as first-class model elements, motivational goal models enable explicit discussion of affective aspects alongside functional and quality concerns and support shared understanding across technical and non-technical stakeholders [10]. At the same time, the research literature emphasises that labels of emotional goals require validation to ensure they reflect the underlying design problem rather than remaining untested assumptions [3].

3. Method: Case Study and Workshop Procedure

This study is a qualitative educational case study [38] that examines how Do-Be-Feel-based motivational goal modelling fits into the early phase of design thinking in project-based learning. The study is exploratory: rather than using a controlled intervention with a comparison group, it examines how the two teams adopted the technique and integrated it with their existing design thinking artefacts, and what usefulness and limitations the students reported. Related educational case studies have used motivational goal models in requirements engineering education [10], and motivational and emotional goal models have also been applied in domains such as branding and organisational process design [6, 11].

The case study was conducted in a design thinking and service design course in the bachelor's programme in Design Thinking and Digital Marketing at the University of Tartu Pärnu College. First-year student teams work on service design projects with real organisations, and the course follows the logic of the Double Diamond. Two teams participated, comprising a total of seven student participants

(n=7). To preserve anonymity, we refer to the projects as Project A, an e-commerce purchase journey, and Project B, a facilitated in-person service with online booking. Team A consisted of four students, and Team B consisted of three students. Throughout the paper, we use the term 'participants' to refer to these student participants. Each team produced a consolidated motivational goal model. In addition, Team B created three phase-specific sub-models for the before, during, and after phases.

At the time of the study, each team was near the end of the first diamond. In the context of its own project organisation, each team had defined a problem statement and formed an initial design intervention. By that point, the students had conducted desk research, trend analysis, and root-cause analysis using problem tree analysis and the 5 Whys method; applied ethnographic methods such as fieldwork and observation; and carried out experiential testing. They had also conducted interviews and synthesised findings through affinity mapping/diagramming and system mapping. In addition, each team had produced early synthesis artefacts, including stakeholder maps, personas, empathy maps, value propositions, initial customer journeys, mood boards, and a business model canvas for its project organisation, but had not yet moved into solution development (see Appendix A for an overview of these methods and tools). Participation in the study activities was voluntary and offered as an optional course assignment. The study was conducted in December of 2025. We used purposive sampling by inviting intact first-year student teams from the ongoing course project, because the workshop was integrated into their active service design work and allowed us to observe adoption of the technique in a realistic educational setting. Participation did not affect course grading, and students could decline to participate or withdraw at any time without consequences. We obtained informed consent prior to data collection. We pseudonymised the projects as Project A and Project B and removed identifying information from the materials; only the research team had access to the data, which were stored securely.

The workshop procedure was informed by prior work on Do-Be-Feel-based motivational goal modelling [6, 10, 11] and consisted of two sessions with a homework task for each team in between. In the first on-site session, each team revisited its existing artefacts and completed one Do-Be-Feel-Who canvas for a selected key user group. Next, the teams were introduced to the motivational goal modelling notation and began drafting their models by translating the Do-Be-Feel-Who outputs into a hierarchical structure linking roles, functional goals, quality goals, and emotional goals. After the session, each team refined at least one model as homework. One week later, the teams met online; each team presented its model(s), followed by a focus group discussion on how the method related to their earlier personas and journey maps.

The data comprised:

1. the produced Do-Be-Feel-Who canvases and motivational goal models;
2. one post-workshop semi-structured focus group interview, documented through detailed notes and a written summary;
3. one online questionnaire with open-ended items and three Likert-scale items on a five-point scale (1–5) assessing perceived usefulness and fit with design thinking practice; and
4. brief researcher field notes from the second session.

The analysis combined content analysis of the produced models [39] with thematic analysis of the qualitative feedback [40]. In the content analysis, we examined how roles, functional goals, quality goals, and emotional goals were represented, focusing on (i) the presence and explicitness of emotional and value-related softgoals, (ii) links between emotional goals and corresponding functional and quality goals, and (iii) differentiation and coverage of stakeholder roles. For the qualitative material, including focus group notes and summaries as well as open-ended questionnaire responses, we applied thematic analysis with an initial deductive coding scheme derived from the research question, such as explicit emotional goals, user understanding, next-step planning, and comparison with personas and journeys, which was refined inductively as themes emerged; codes were iteratively grouped into higher-level themes describing perceived usefulness and limitations.

4. Findings and analysis

4.1. Content analysis of the motivational goal models

To address the research questions, we triangulated artefact-level observations from the produced Do-Be-Feel-Who canvases and motivational goal models with the participants' feedback from the post-workshop questionnaire and focus group notes and summaries. The content analysis focused on whether and how teams represented (a) stakeholder roles, (b) functional goals, (c) quality goals, and (d) emotional goals, and how explicitly emotional and value-related softgoals were linked to concrete service activities.

Both teams made stakeholder roles explicit in the models rather than treating users as a single generic actor. In Project A, the model distinguished the end customer from supporting service roles, such as customer service, order fulfilment, and logistics, which helped the team articulate how different actors contribute to the intended customer experience. In Project B, the model(s) explicitly separated at least the buyer/organiser role from the participant role and the instructor/facilitator role, enabling discussion of where needs and expectations diverge within the same service.

In both projects, emotional goals were represented as first-class model elements and attached to specific parts of the goal structure. Project A articulated multiple desired emotional outcomes, such as anticipation or excitement, confidence, and inspiration, and also included a clearly stated undesired emotional outcome to avoid, namely disappointment, which served as a negative boundary condition for design decisions. Project B similarly captured both desired emotional outcomes, such as feeling safe, heard, relaxed, and issues of potential uncertainty in the early journey, notably around booking and payment-related steps. Overall, emotions were not only mentioned descriptively but represented as explicit targets linked to functional goals and associated quality goals.

Each motivational goal model organised functional goals into a recognisable backbone aligned with a journey-like progression, such as discover → choose → transact → receive/participate → reflect. In both projects, the teams ordered the functional goals as a sequential process, effectively presenting the functional requirements in the step-by-step order. Quality goals, such as clarity, transparency, ease, and safety/trustworthiness, were attached to the functional goals where they matter most. Team B's decision to build stage-specific sub-models strengthened this linkage by making emotional transitions visible in the before, during, and after phases of the service lifecycle, rather than compressing the experience into a single diagram.

Overall, the models produced by each team were coherent and understandable and followed the intended notation: goal types were generally mapped to the correct symbols and roles were represented explicitly. Most functional goals were phrased in an action-oriented form consistent with actions to be performed and outcomes to be achieved, which supported the readability of the functional backbone. At the same time, the models showed minor visual inconsistencies, such as spacing, alignment, and occasional layout irregularities, that affected presentation quality rather than meaning. This suggests that students were able to apply the conceptual distinctions of the Do-Be-Feel method correctly, while the visual polishing of the diagrams would benefit from additional practice or tooling support.

Across the two projects, each model consistently differentiated stakeholder roles, formed a functional backbone aligned with a journey-like flow, and attached role-specific emotional goals and quality goals to the functional goals where they matter most. In Project B, the phase-specific sub-models further externalised emotional transitions across the service lifecycle. Together, these artefact-level patterns demonstrate how early insights can be synthesised into an explicit and role-specific structure in which emotional and value-related softgoals are traceable to functional service goals and associated quality attributes.

4.2. Questionnaire results (Likert-scale items)

All seven participants completed the post-workshop questionnaire, which included three Likert-scale items on a five-point scale from 1 to 5. On this five-point scale, 1 indicates low agreement and 5 indicates high agreement. In the Likert item "Compared with relying only on our previous work…", "previous

work" refers to the teams' pre-workshop design thinking synthesis artefacts, especially personas, empathy maps and customer journey maps. Likert-type items are commonly used to capture respondents' ratings of agreement or perceived usefulness [41]. The Likert-scale items capture participants' perceived usefulness of the method along three outcomes: user understanding, sensemaking, and next-step planning, and shared team understanding. Table 1 summarises descriptive statistics and top-box metrics, and Table 2 reports response distributions.

Table 1
Likert-scale results (1–5) after the workshop (n=7).

Item	Mean	SD	Median	IQR	Min–Max	Top2 (4–5)
The model helped us understand the user better than the design thinking methods we had used before	4.57	0.53	5	1.0	4–5	7/7 (100.0%)
Compared with relying only on our previous work, the model made it easier to make sense of the problem and plan the next steps	4.00	1.15	4	1.5	2–5	5/7 (71.4%)
The model helped our team build a shared understanding of user needs and the project goals	4.71	0.49	5	0.5	4–5	7/7 (100.0%)

Table 2
Response distributions for the Likert items (counts; n=7).

Item	1	2	3	4	5
The model helped us understand the user better than the design thinking methods we had used before	0	0	0	3	4
Compared with relying only on our previous work, the model made it easier to make sense of the problem and plan the next steps	0	1	1	2	3
The model helped our team build a shared understanding of user needs and the project goals	0	0	0	2	5

We report descriptive statistics to summarise the distribution of responses for each Likert-type item. These statistics include the mean, standard deviation (SD), median, interquartile range (IQR), and the minimum–maximum range (min-max) [42]. Ratings were consistently high for two perceived outcomes. The statement "The goal model helped us understand the user better than the design thinking methods we had used before" received a mean score of 4.57 (SD=0.53), with all participants rating it 4 or 5 (Top2=100%). Similarly, the statement "The goal model helped our team build a shared understanding of user needs and the project goals" reached a mean of 4.71 (SD=0.49), again with Top2=100% and a strong concentration of 5 ratings (5/7).

In contrast, the perceived process support showed greater dispersion. The statement "Compared with relying only on our previous work, the model made it easier to make sense of the problem and plan the next steps" had a mean of 4.00 (SD=1.15). While most participants rated this item positively (Top2=71.4%), two responses fell below the positive range (one rating of 3 and one rating of 2), indicating more varied perceptions of the method's support for sensemaking and next-step planning.

Taken together, the Likert results suggest that the participants perceived the method as most consistently useful for improving user understanding and building shared team understanding. The perceived support for problem sensemaking and next-step planning was still generally positive, but varied more across participants, which is also reflected in the wider spread of responses in Table 2.

4.3. Thematic findings from focus group notes and open-ended responses

The focus group notes and open-ended questionnaire responses were analysed together through thematic analysis. All participant quotes are translated from Estonian. The five themes explained below captured the most consistent patterns.

Theme 1: The method made emotional goals concrete and discussable. Participants repeatedly described a "Wow!" moment when they saw emotional outcomes positioned alongside functional goals and quality attributes.

> "It brought out emotional aspects that we might not have focused on otherwise, and they can be more important than we think." (Participant 4, questionnaire)

The activity helped teams name emotional needs that were present in interviews and personas but remained diffuse in earlier synthesis, such as uncertainty during booking, the need for control during purchase decisions, and feeling safe during payment and participation. It helped the participants better grasp the user's perspective and discuss needs in the language of the user experience, whereby they felt increased empathy towards the target group. One participant highlighted that even short steps, such as online booking, can contain multiple emotional states rather than a single stable feeling.

> "The goal model highlighted how detailed and nuanced the process actually is and how much deliberate design it requires." (Participant 6, questionnaire)

Theme 2: Role thinking changed the quality of discussion. Participants emphasised that explicitly separating roles, such as buyer or organiser versus participant and customer versus supporting service roles, improved their reasoning about the experience.

> "It forced us to step into the shoes of the participant and think about the service from their perspective." (Participant 4, questionnaire)

This was reported as particularly valuable when a service involved multiple stakeholders whose success criteria and emotions differ.

> "We gained a better overview because it included many different perspectives and made us consider feelings at each step." (Participant 6, questionnaire)

Several participants noted that role separation was a stronger contribution than adding yet another journey-like diagram.

Theme 3: The motivational goal model worked as a synthesis and communication artefact. Participants described the model as a concise overview that can be used to align the team and communicate with stakeholders.

> "It would fit well as a one-pager for an overview; it gives a clear picture and is a good way to present the project." (Participant 1, questionnaire)

Rather than replacing personas or journeys, the model was seen as an integrative summary layer, a higher-level artefact that connects earlier outputs and makes priorities easier to justify. This function was mentioned both for internal alignment through shared understanding and for explaining the project to a client organisation.

> "I was surprised that I had not used or considered this method earlier, because it is clear and explanatory." (Participant 5, questionnaire)

Theme 4: Perceived simplification depended on where the team was in the process. Some participants experienced the model as strongly simplifying next-step planning because it clarified what needed to be designed or validated next.

> "Without the right tools, it would be difficult to ensure that the whole service is logical, smooth, and pleasant for the user. The goal model provided a strong structure for that." (Participant 6, questionnaire)

Others reported less perceived simplification because their earlier work was already well structured, and the model mainly confirmed the direction. This aligns with the larger variance seen in the second Likert item.

Theme 5: Practical constraints and suggested improvements. Participants noted two main limitations: (a) initial ambiguity in classifying participant statements into Do-Be-Feel-Who lists without clear prompts, and (b) the effort required to translate lists into a coherent hierarchy.

> "It was difficult to distinguish words that describe a state from emotions or feelings, so I kept hesitating when describing emotions." (Participant 4, questionnaire)

A practical suggestion was to support the workflow with a lightweight digital tool or template that reduces manual formatting overhead, allowing teams to focus on meaning and structure rather than diagram mechanics.

> "At first, the method seemed logical and simple, but when we started formatting it, many new insights and questions emerged. Creating the diagram is difficult at the beginning, especially the first time." (Participant 7, questionnaire)

> "A good idea would be an automated system where you can add boxes, hearts, clouds, and so on, and the 'tree' is generated automatically. That would be motivating and helpful." (Participant 7, questionnaire)

Summary in relation to the research questions: Taken together, the themes describe what usefulness and limitations participants perceived when using Do-Be-Feel-based motivational goal models alongside personas and journey maps in the early design phase. Reported usefulness centred on (i) making emotional goals explicit and discussable, which helped improve user understanding and supported the development of empathy, (ii) improving role-based reasoning in multi-stakeholder services, and (iii) providing a reusable synthesis and communication artefact. Reported limitations are related to the initial learning curve in classifying participant statements into Do-Be-Feel-Who lists and the effort required to translate the lists into a coherent goal model, while perceived impact on next-step planning varied depending on the maturity of the prior artefacts created by the teams.

5. Discussion

Our findings show that Do-Be-Feel-based motivational goal models complement persona and journey map artefacts by functioning as a bridge artefact for early-phase synthesis. In our cases, the models condensed early insights into a single explicit structure that made relationships visible and discussable within the team—role → functional goal → quality attribute → emotional or value-related softgoal (Section 4.1). This use aligns with prior work that frames motivational goal models as lightweight representations that can function as boundary objects for shared understanding and communication without heavy formalisms [10, 34]. Importantly, the hierarchy in motivational goal models does not prescribe a specific implementation because goals are not directly executable and leave open how they are achieved, including the steps through which they are achieved [8]. Therefore, the step-by-step ordering observed in our workshop likely reflects process thinking by the participants, for example thinking carried over from journey maps, rather than a constraint of the notation.

Role differentiation emerged as one of the clearest sources of added value when applying Do-Be-Feel-based motivational goal modelling in a service design context. Motivational modelling explicitly foregrounds stakeholder roles to represent socio-technical settings and to connect role-specific goals within a shared view [33, 34]. Rather than treating the user as a single generic actor, both teams modelled multiple stakeholder roles (Section 4.1), and participants explicitly noted that this role-based view improved the quality of discussion (Theme 2). This is particularly important in services, where the experience is co-produced across actors whose expectations, responsibilities, and emotions diverge, such as a buyer or organiser versus a participant, or a customer versus supporting service roles. Making roles explicit helped teams articulate more precise design targets and identify where needs and emotional risks differ within the same service journey, instead of averaging them into a single persona-level narrative.

Our results also indicate that emotional and value-related softgoals became primary design targets in Do-Be-Feel-based motivational goal modelling. Rather than remaining background notes in interview summaries or persona descriptions, these softgoals became explicit elements that teams could jointly discuss, refine, and use to justify design decisions. This aligns with emotion-oriented requirements

engineering work that models emotional goals explicitly so they can be discussed and linked to functional and quality requirements [2, 4, 5, 10, 11]. In our cases, emotions were connected to concrete service steps represented as functional goals, such as booking, payment, participation, making them traceable: teams could point out where a performer of the given role should feel safe, confident, or inspired, and which quality attributes were intended to support that. Project A's inclusion of an undesired emotion, disappointment, was particularly useful as a constraint, because it functioned as a negative target that helped filter design options and set priorities by ruling out choices that would increase the risk of producing the experience the team aimed to avoid.

At the same time, the findings highlight an effort–benefit tradeoff that influences when the method becomes worthwhile in education. While participants consistently rated the method as highly useful for user understanding, including empathy-building, and shared team alignment (Section 4.2), perceived support for sensemaking and next-step planning varied across participants. This pattern is consistent with prior teaching experience on motivational models: although the notation is intentionally lightweight, participants still require scaffolding to classify statements by participants into Do-Be-Feel-Who lists and translate the lists into a coherent hierarchy [10]. In our study, variation in perceived simplification likely reflected differences in the maturity of the teams' existing synthesis artefacts and the additional modelling work required to consolidate goals into a hierarchy. This suggests that short, guided modelling steps and templates can reduce formatting overhead and make the method more consistently beneficial in time-constrained course settings [10, 4].

Finally, while modelling emotional goals as explicit elements improves discussability and traceability, the research literature cautions that labels of emotional goals require validation to ensure they reflect the underlying problem rather than the remaining untested assumptions [3]. In this sense, motivational goal models should be interpreted as a structured starting point for early synthesis that supports planning for follow-up validation, and not a substitute for empirical checking of the fulfilment of emotional goals.

Taken together, the educational case study suggests that Do-Be-Feel-based motivational goal modelling can strengthen early-phase synthesis in service design education by turning scattered early insights into an explicit, role-specific structure that links functional service steps with quality concerns and emotional aspects, making experience-related targets easier to articulate and discuss. In the participants' accounts, the approach complemented personas and customer journey maps by adding clearer traceability from roles to steps and associated emotional outcomes and by sharpening role-based reasoning in multi-stakeholder services, while its main challenges were the initial ambiguity of the Do-Be-Feel-Who categorisation and the effort required to translate the lists into a coherent hierarchy.

6. Conclusions

This qualitative case study examined Do-Be-Feel-based motivational goal modelling as an early-phase synthesis technique in service design education, focusing on how students perceived its usefulness and limitations compared with personas and customer journey maps. Across two student projects, the models differentiated stakeholder roles, organised functional goals into a journey-like backbone, and linked role-specific emotional or value-related softgoals and quality goals to the functional steps where they matter most. In addition, one team produced phase-specific sub-models for the before, during, and after phases, which made emotional transitions across the service lifecycle more explicit. Student feedback indicates that the method complemented but did not replace personas and customer journeys by acting as a lightweight bridge artefact that makes experience-related goals explicit, discussable, and traceable to concrete service activities, supporting perspective-taking and perceived empathy. Reported limitations were the initial ambiguity of classifying the Do-Be-Feel-Who statements and the effort required to translate lists into a coherent hierarchy; perceived support for next-step planning varied with the maturity of the teams' prior synthesis artefacts. Overall, the findings suggest that Do-Be-Feel-based motivational goal models can strengthen early-phase synthesis in service design education by supporting role-based reasoning and turning emotional and value-related softgoals into actionable design targets linked to functional goals and quality attributes, provided that teams receive

scaffolding and later validate emotional goal labels.

This study is limited to two teams from a single course offering. As an exploratory qualitative case study, it is not intended for statistical generalisation; instead, it supports analytic generalisation and transferability to similar design thinking education settings, and findings can differ in other courses, institutions, or project contexts. The study relies on produced artefacts and self-reported experiences, and we did not evaluate downstream design quality or track how the created modelling artefacts were used in later ideation, prototyping, and testing. A further limitation is the participants' experience level: because they were first-year students, the findings may reflect learning effects and limited prior modelling experience, and outcomes may differ with more experienced students or practitioners; at the same time, first-year students are a realistic target group in design thinking education, which makes the setting relevant for teaching practice.

Future work should examine why participants tended to structure functional goals as a step-by-step process, even though motivational goal model hierarchies do not prescribe an execution sequence. Future studies should also test templates or lightweight tools to reduce formatting overhead, compare using the method at different points in the course and across teams with different process maturity, and investigate how early traceability (role → function → quality → emotion/value) influences later prioritisation and testing decisions. Finally, further research work should address analysing conflicts between goals [43].

Declaration on Generative AI

During the preparation of this work, the author(s) used Scopus AI and Consensus AI to identify relevant materials. Subsequently, the author(s) used the ChatGPT 5.2 Thinking model for grammar, spelling, and translation checks. After using these tools/services, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

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