# The intention-behaviour gap: Three case studies of the application of general pedagogical knowledge[1]

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## ABSTRACT

*Various studies have investigated the intention-behaviour gap in human behaviour, but research on this effect in the teaching and learning domain specifically are still sparse. This paper analyzes the enactment of intentions as it relates to the general pedagogical knowledge that teachers intend to apply in their classrooms. Based on a qualitative-reconstructive study within instrumental case studies, the study focused on the gap between teachers stated intended general pedagogical knowledge application and their intention-realization in the classroom. The findings indicated varying individual degrees of intention-behaviour gaps among the three cases, but no full intention-realization in any of the cases. Conversely, the findings also show that all the teachers realized some additional components of their general pedagogical knowledge which were not initially stated at the point of planning.*

**Keywords:** intention-behaviour-gap, general pedagogical knowledge, teacher professionalism, cognitive pattern, teaching practice

## INTRODUCTION

The gap between human intentions and human behaviour has been studied for many years (Fennis et al., 2011; Gollwitzer et al., 2009; Rhodes & de Bruijn, 2013; Sheeran & Webb, 2016; Sniehotta, Scholz & Schwarzer, 2005). Aligning with studies on motivation, self-efficacy, self-regulation and goal setting in Psychology, studies on the intention-behaviour gap in human beings can be found in nutrition studies on sustainable diets (Leonie, Angelika & Carola, 2018), environmental sustainability (Swaim et al., 2014), physical activity behaviours (Rhodes, Plotnikoff & Courneya, 2008), health sciences (Gucciardi, 2016), consumerism (Hassan, Shiu & Shaw, 2016) and in many more scientific fields. Consistently, across multiple studies, findings emerge that indicate significant gaps between intention and behaviour and the fact that changing intentions do not necessarily guarantee behaviour change (Fife-Schaw, Sheeran & Norman, 2007; Sheeran & Webb, 2016). In education, intention-behaviour gaps have been studied to assess student behaviour (Escobar Alvarez, Ángeles & Ciancio, 2021; Henderikx, Kreijns & Kalz, 2017; Mergelsberg et al., 2021; Olugbara et al., 2020). A Norwegian study by Almas and Krumsvik (2008) specifically

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found, for example, that teaching practices remain the same when teachers do not feel comfortable with the proposed changes in technology-rich ICT classrooms. In terms of decreasing the intention-behaviour gap, we know that the quality of the respective intention and its likelihood of enactment is influenced by the nature of the focal goal, the basis of the intention, and also by the properties of intention (Sheeran & Webb, 2016). In teaching, this means that a range of variables need to be aligned in order to minimize the gap between what teachers intend to do and what actually transpires in classrooms around the world.

In comparison to other fields, studies on the intention-behaviour gap in teaching are sparse. General pedagogical knowledge (GPK) as a theoretical construct is the professional knowledge utilized by teachers for dealing with diverse pedagogical tasks and requirements in the classroom, e.g., knowledge about classroom management, teaching methods, classroom assessment, and student heterogeneity (Darling-Hammond, 2000; Voss, Kunter & Baumert, 2011). This study focuses on the intention-behavioural gap of teachers with regard to the implementation of their GPK. What are the stated intentions of teachers in terms of the application of GPK in their classroom, and how do those intentions relate to actual actions in their teaching? The significance of this particular form of knowledge attests to the positive effects of the quality of teaching on student performance (Guerriero, 2017). In its Sustainable Development Goal 4 (SDG4), the United Nations also calls for the development of pedagogical competencies specifically, so that the educational requirements to support SDG4 can be implemented (Leicht, Heiss & Byun, 2018). The current understanding of GPK is based on various studies such as COACTIV, TEDS-M or ITEl TKS (Guerriero, 2017; König & Blömeke, 2010; Voss et al., 2011) which conceptualize and assess GPK. In the context of competence orientation, Kunter et al., (2013) and Voss et al., (2015) drew up an expanded definition and formulated four different areas of GPK:

- Learning (motivation, emotional and psychology knowledge, heterogeneity, development psychology knowledge)

- The class as a complex social structure (management, communication, social conflicts)

- Methods for teaching and learning (evaluation and diagnostic)

- Design of learning environments (spatial, material, media design).

General pedagogical knowledge is thus a form of knowledge with multiple perspectives inherent to it (Voss et al., 2011; König et al., 2011). In the teaching profession it is important to not only have the knowledge, but also to be able to apply it in specific situations (Nolle, 2004). In order to apply the knowledge (e.g., pedagogical competencies), there needs to be a clear *intention* to apply it (Sheeran & Webb, 2016). Since everyday teaching makes the pedagogical action unpredictable, the actions of teachers can be described as complex and the relation between their intentions to apply GPK and the actual actions that take place, critical for successful teaching and learning (Helsper, 2004). Yet, there is still limited textured discussion in the international discourse on the ways in which teachers base their professional acting on explicit knowledge (that can be readily articulated) or implicit (knowledge that is difficult to express and is based on experiences) and declarative (knowing-that) or procedural knowledge (knowing-how) (König et al., 2021; Polanyi, 1985; Ryle, 1949; Nolle, 2004; Neuweg, 2004; Neuweg, 2022; Hackl, 2004; Van Dijk et al., 2020).

On occasion, this phenomenon is partially integrated in teacher education programmes, within the discussions of the theory-practice gap in teaching and learning (McGarr, O'Grady & Guilfoyle, 2017; Korthagen, 2007). This gap then refers to the discrepancy between teachers' knowledge and their actions (while teaching), with their focus primarily on the conversion of theoretical knowledge into practice (McGarr et al., 2017). Literature suggests various causes for the theory-practice gap. One reason may be insufficient knowledge about general school theories, as well as insufficient knowledge about the need

for the application of theory in practice (McGarr et al., 2017; Korthagen, 2010; Shaharabani & Yarden, 2019). In this context, Robinson (1998) argued that narrowing the theory/research practice gap is not just a matter of disseminating research more effectively and that there are further reasons for the gap.

Another cause may lie in the complexities of teaching (Hoban, 2005). Interactions in the classroom are influenced by many different factors like the students' responses, the curriculum, the institutional structures or the values of the teachers, and the requirement to react spontaneously in different teaching situations (Hoban, 2005; Schön, 1983). These variables can make it challenging to plan teaching and apply explicit theories.

The third cause of the gap relates to the personal learning process of the teachers and their cognitive strategies to apply theory in practice (Korthagen, 2010). It makes the specific gap between what a teacher intends to do and what they actually do explicit. It is not just about the gap what a teacher knows and what they practice, it is also about what a teacher decides to do on the basis of what they know (e.g., intention), and what then transpires in the classroom. The gap refers to the 'space' in the process that 'leads from intention to action' (Sniehotta, Scholz & Schwarzer, 2005: 144). Korthagen (2010) also argue that in order to deal with the gap, it is essential to provide both an elaborated view of the intended process of teacher learning and specific pedagogical approaches in teacher preparation programmes. It is also necessary to link theory and practice effectively during teacher preparation programmes and to support the acquisition of useful and sustainable theories. Other factors that make it difficult to deal with the theory-practice gap are the emotions, feelings and cognitive patterns of teachers (Korthagen, 2010). We know that 'intentions are more likely to be translated into action when respective behaviors are easier to perform' (Sheeran, Trafimow & Armitage, 2003: 393). This suggests that teacher preparation programmes should pay particular attention to scaffolding the levels of complexity of the pedagogical knowledge acquisition of its students.

More recent studies suggest that the intention-behaviour gap in the general population is large and that the original intentions of individuals get translated into action only about half of the time (Sheeran & Webb, 2016). In teaching, that would mean that a teacher only enacts original intentions and planned applications of pedagogical knowledge 50% of the time. The potential detrimental results for learning seem evident. We also know, fortunately, that the 'quality of the intention matters, and the nature of the focal goal, the basis of intention, and properties of intention each influence rates of intention realization' (Sheeran & Webb, 2016: 16). For teachers, intention realization therefore needs to tie in with clear goals and clear views on how to attain the goal.

In view of the rare number of studies that investigate the intention-behaviour gap in teachers' application of their GPK in the classroom, more research in this field seems necessary for the further development of teacher education and the improvement of classroom practice. Furthermore, the importance of high intention realization rates to ensure quality education also supports the need for deeper qualitative investigation.

## THE CURRENT STUDY

The current study explored the levels of intention-realization in teachers' cognitive concepts of GPK and their actions in the classroom. The study adopted a qualitative reconstructive approach by using practice-oriented research. The research question was:

What are the levels of intention-realization between the planned conceptual patterns of GPK of teachers and their concrete actions in the classroom?

## METHODOLOGY

Our study used a qualitative, reconstructive theory-building process to present everyday school practice and to reconstruct cognitive concepts of the GPK of Austrian teachers and their teaching actions. The reconstructive approach enables to explore the field of school and to generate new models of GPK (Lamnek, 2010). The approach involved 45-minute semi-structured interviews with 26 teachers, and ethnographic observations with nine teachers. In total, each teacher was observed for six days. The six days were divided into two segments of three consecutive days, with a pause of several months between the two segments, while the number of teachers was based on the principle of theoretical saturation (Lamnek, 2010; Strauss & Corbin, 1996). The data were collected from teachers from different types of schools in Austria, i.e., primary schools (n = 9), lower secondary schools (n = 9), upper secondary schools (n = 8). From these schools, teachers with different years of work experience (between one and 40 years of experience as teachers), as well as different gender groups and subject specializations (e.g., science, humanities and arts).

In the semi-structured interviews, teachers were asked about their understanding of GPK and how they explicitly deal with and apply GPK in the classroom. The data collected from the interviews were evaluated by using interpretative phenomenological analysis. The qualitative-reconstructive research method and the interpretative phenomenological analysis complement each other in that both seek hypothesis-generating procedures within the research process.

In order to examine the extent to which the teachers actually applied what they had intended in their practice, the themes that emerged from the interpretative phenomenological analysis of the interviews were utilized to generate the foundation for the next phase of the study. An individualized map was drawn to depict the conceptual understanding of each teacher of their GPK, after which the map was used to create a checklist of intentions that was used during the subsequent structured ethnographic observations.

The structured ethnographic observations in this study reconstructed the GPK of the teachers and also investigated the extent to which the teachers implemented the actions they articulated during the interviews. The interviews were thus used to reconstruct the intentions, assessments and descriptions of the teachers, and the observations expanded the investigation by allowing the recording of concrete pedagogical actions and the manifestation of intentions (Aeppli et al., 2016).

From the nine teachers who were observed, three case studies were selected through purposive sampling to represent teachers from each type of school – a primary school, a lower secondary school and an upper secondary school. The findings that are presented here as instrumental case studies show the initial individual intentions and cognitive patterns of GPK of the selected teachers and the level of subsequent intention realization for each teacher. The gaps between their intentions and behaviours are indicated in table format.

### *Ethics statement*

All participants provided consent to participate in the study.  All data pertaining to participants were anonymised and potential identifiers within texts removed.

## THREE CASE STUDIES

The case studies are introduced with short descriptions of each of the three participants. The findings from each case study are then presented in tabular format. Based on the interview data, person-related, individualized presentations are made of the participants' intentions to apply their GPK so that it becomes evident in their teaching. From the observation data, these intentions are then mapped in tabular format to assess the level of intention-realization for each participant. Intention realization is indicated on three

levels: full, partial and none. In addition, some extracts from the interview data are quoted to complement these findings.

**Case Study 1 – Primary school teacher**

The first case study refers to Max, a male teacher teaching in primary school. He was 29 years old and had been teaching for five years. He completed his education at a teacher training college and was teaching all common subjects in a primary school. Max regularly attended advanced training courses and had completed Montessori training.

Max described pedagogical knowledge as multidimensional knowledge and characterized it as relating to five different areas: didactic knowledge; action knowledge; knowledge about the person; knowledge about learning; and knowledge about diversity. Max characterized his knowledge about himself as self-reflection and also stressed the need to show an active interest in children. Further cognitive categories for Max were knowledge about learning and knowledge about diversity. The characteristics mentioned and assigned to the category 'learning' were knowledge for motivation, social learning, dealing with mistakes, knowing the needs of the learners, dealing with learning difficulties and the promotion of independent learning. Max's knowledge about diversity was characterized by cooperation with external staff, the promotion of the strengths and weaknesses of individual pupils, and knowledge about potential. He presented a multidimensional understanding of pedagogical knowledge that referred mainly to didactic methods and modes of action that support learning and provide individual support.

Max named specific pedagogical actions that he intended to apply in class. He summarized them as 10 actions, as presented in Table 1. These intentions emanated from the interview. The table shows the extent to which the above-mentioned intentions (e.g., fields of action) were identified during the subsequent classroom observations. The level of intention realization was captured on three levels: Full, partial and none.

*Table 1:*
*Intention realization of a teacher in a primary school*

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
|---|---|---|
| To take different learning levels into account. | *Full* | He allowed all students to choose tasks that are appropriate for their level. |
| To encourage individual work. | *Full* | He created space in which the students can learn individually. |
| To encourage students to work independently – if the students need support, they can get it from the teacher at any time. | *Full* | He created an atmosphere in which the students could work independently. If they had any questions, they could contact him at any time. He offered the students individual support. |
| To help the students feel comfortable and do well. | *Full* | Students liked to be in his class, they seemed to have fun, and they behaved respectfully. |
| To use different materials. | *Full* | He prepared a variety of learning materials for the same content, thus providing options for the students. |
| To make the students work and use their knowledge and skills. | *Full* | He documented the students' achievements, he selected goals and facilitated individual discussions. |

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
|---|---|---|
| To give the students individual time to learn (open time management). | *Full* | The students were allowed to organize their time for learning independently. |
| To provide a learning environment where an ethos of "nobody is perfect" reigns. | *Full* | Each student was accepted for who they are. He exemplified tolerance and an open attitude. |
| To help students learn from each other (e.g., older and younger students work together). | *Full* | Students of different ages were in the same class in this school. This enabled older students to help younger students and learn from each other. |
| To encourage independent work: If students have any questions, they have to ask their classmates first and then the teacher. | *None* | Students asked the teacher for support first. Students only asked each other for help when the teacher initiated the process and told them to do so. |

Table 1 illustrates how nine of the pedagogical actions mentioned were explicitly observed in class over a six-day period. Only one area of GPK that was initially mentioned by Max could not be captured within the structured ethnographic observations. The only deviation that was observed related to the fact that students tended to call for help from him as a teacher first, rather than asking their peers. In this case study, the intention behaviour gap was small and there was a high level of congruence between the teacher's intentions, his cognitive patterns and planning, and his actions in the classroom. Max explicitly named his actions (i.e., intentions) and then realized almost all these intentions in the classroom.

In addition to the pedagogical forms of action that Max planned himself, additional pedagogical activities were also observed. The observations illustrate how other pedagogical forms of actions (other than those initially intended) were reconstructed in his classroom. In the interviews, Max named specific GPK about teaching concepts, education, cooperation, support/promotion, diversity, (pedagogical) interaction, classroom management and didactics. Even though it was not explicitly mentioned among his intentions, Max also applied further GPK in the areas of the person and didactics, such as knowledge about leadership, disorders, posture and emotions, dealing with challenges, and body language. Max showed a multidimensional understanding of pedagogical knowledge and a small intention-behaviour gap. The comparison demonstrated the comprehensiveness of his implicit knowledge, the high levels of his intention stability and high goal realization. It also showed the realization of pedagogical knowledge that did not even form part of his original intentions.

**Case Study 2 – Lower secondary school teacher**

The second case study refers to a teacher who was teaching in the lower secondary school. Paula was a 43-year-old female who had been teaching for 20 years. Her subjects were History and English. Paula completed her education at a teacher training college. She showed great interest in scientific literature and new knowledge in the field of learning and completed numerous further training courses on topics such as coping and relationships in the classroom.

Paula characterized GPK mainly in terms of social action between teachers and students:

Pedagogical knowledge, for me that is being able to lead a class. So I see myself as a social actor and my task and my position as a teacher is to act socially. I need knowledge and the ability to act in order to socially balance a class and to lead a class and to see that they develop into a good team among themselves. (Interview 9)

Paula's GPK was reconstructed graphically based on the interview. For Paula, teaching and learning knowledge was about social action. In this case study, learning knowledge primarily referred to knowledge about social actions or the development of a sense of community. Teaching involved the knowledge areas of social leadership, instruction for learning, social skills, the importance of one's own role as a teacher and related power dynamics. In addition to the specific areas of knowledge on the learning and teaching side, Paula named four general knowledge components that were fundamental to social action. These were the teaching of values and attitudes, the promotion of competence and intelligence, the creation of an atmosphere of well-being, and taking on responsibility.

> I try to teach democracy in class, to bring democracy into the classroom so that they have responsibility for their class and their learning. Also, for the class organization. And these are very often little things. I often send them shopping, then in order to learn well and to learn in a structured way we need materials, no matter whether it's paper or hole punches. And you always have to make sure that they are available. At some point, the children are ready to fetch and organize the things themselves. To give them jobs, no matter if he is the energy manager or the floor manager. So they basically organize their class themselves. (Interview 9)

According to Paula, knowledge was intricately linked to the GPK category of social action. She defined this as knowledge for communication and as basic knowledge. The knowledge about communication included knowledge structures about asymmetric, direct communication, as well as the planning of time resources for the realization of communication in class. Basic knowledge was based on knowledge from specialist literature and the competence to fall back on this.

According to Paula, specific basic knowledge referred to the knowledge of learning and formative performance assessment. She took the position that learning only took place through relationship, which can be achieved by adopting the attitude of a coach rather than a teacher.

Paula named specific actions that can be taken to show GPK in her teaching. She described six different forms, which are shown in Table 2. For the areas of pedagogical knowledge mentioned, the table shows the extent to which her intentions were realized in the classroom, as captured during the classroom observations.

*Table 2:*
*Intention realization of a teacher in a lower secondary school*

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
| --- | --- | --- |
| To act socially. | *Full* | During the observations, the teacher showed how she was acting socially in the class. Social interaction related to different areas: learning, group, individual person, awareness raising, imparting values and norms. |
| To lead a class and have an overview of the individual needs of the students. | *Full* | She led the class effectively. She knew how each child learns, what weaknesses and strengths they have, and applied individual attention and learning strategies. |
| To create a good atmosphere in which all students feel comfortable. | *None* | Various challenges like bullying, fights between students and the exclusion of some students were observed. |

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
|---|---|---|
| To be part of the group. | *Full* | She supported individual learning and moved confidently around in the room. |
| To help students reflect about their learning process. | *Partial* | The students seemed unable to reflect on their learning process. |
| To make students responsible for their own learning. | *Partial* | *Even though the teacher gave the students much freedom in which they were independently responsible for their learning, observations indicate that some children did not manage to learn independently; but rather remained fixated on the teacher.* |

Paula named a total of six specific intentions. Three of the intentions that she stated in the interview could be observed as full intention-realizations in her classroom. Two more of the intentions became partially realized and visible during observation. One of the intentions she articulated could not be observed and identified. The results therefore illustrate varying degrees of intention-realization, with full intention-realization half of the time, partial intention-realization for approximately a third of the stated intentions and one stated intention not having been realized on any of the six days of observation. She described specific knowledge that she applied in class, which could not at all, or only partially be reconstructed by the observations.

Observations revealed a wealth of other GPK manifesting, even though it was not mentioned as original intentions for this participant too. Observations illustrate how Paula named specific GPK from the categories (pedagogical) interaction, classroom management and person. Further GPK could be reconstructed for all three criteria mentioned. Other areas of her GPK that Paula applied, but did not name, included knowledge about communication and didactics. The extent to which intentions and cognitive patterns corresponded to or deviated from her pedagogical actions in the classroom varied for this teacher. Person-related variations that were recorded during the examination include the following aspects:

This teacher had more GPK than she had verbalized whilst stating her intentions. Even though she clearly possessed a wide array of GPK and skills, they were not expressed comprehensively when she discussed her intentions. The fact that of the six actions she initially listed, two could be observed only partially and one category could not be observed at all, indicates that there might be a gap between her assumptions of knowledge applied and her actual actions in the classroom.

However, as with the teacher in Case Study 1, this teacher also extensively applied other GPK that she did not mention during her discussion of her explicit intentions. This illustrates prototypically that she possessed extensive implicit knowledge that was articulated in the classroom but not consciously acknowledged as teaching intentions.

## Case Study 3 – Upper secondary school teacher

Case Study 3 involved a teacher who taught in an upper secondary (grammar) school. Anna was a 45-year-old female who had been teaching for 20 years. Her subjects were History and sports. She completed her education at a university, and in the course of her professional life she later completed numerous further education and training courses. Anna was very committed to teaching and actively participated in school life through school development projects.

Anna's understanding of GPK was divided into two types of knowledge – basic knowledge and experiential knowledge. Anna saw GPK as multidimensional understandings of teaching and learning and described basic knowledge and experience as the basis of pedagogical knowledge. These were standing in a clear relationship to each other:

> For me, pedagogical knowledge is divided into two parts. One is the knowledge about one thing. That is knowledge about expertise. A lot of individual knowledge about something, about pedagogical areas and pedagogical knowledge means for me the experience that flows into teaching. (Interview 13)

According to Anna, basic knowledge controlled, questioned and influenced experiential knowledge. She stated that basic knowledge referred to theoretical forms of pedagogical knowledge. For her, experiential knowledge was based on the GPK elements gained through experience.

On the basis of the forms of knowledge that she articulated, pedagogical fields of knowledge were developed on the learning and teaching side. The different areas related to knowledge about the role of a teacher, teaching and learning, as well as the knowledge areas of education, systems knowledge, relationships, diagnostics and support. It emphasized people-centeredness and focused mainly on needs and support measures.

> I think it's very important to like people. I have to or rather you have to see young people as somebody, yes these are people who are not ready, who are in development and who cannot be measured by what I should or should be able to do as an adult. They are in a development process. You have to tell yourself again and again that they cannot know that yet, but I help and support them. I try to accompany them with support measures. (Interview 13)

In addition to the focus on learning, Anna explicitly addressed the dependence on and the effect of the system and its influence on GPK:

> The whole organization 'school' what comes to us from the administration, the ministry, the political side. So, the factors are simply becoming increasingly noticeable. This all flows in, this has an effect on a teacher. You take them into the classroom in some way. If you look at it abstractly and keep a distance from it, it still has an effect on the profession and on educational knowledge. (Interview 13)

She argued that GPK depended not only on individual teachers, but rather acknowledged the influence of the structural conditions within which teaching takes place. She pertinently mentioned administration and educational policy processes.

During the interview, she also named specific actions that could be used to make GPK visible. Anna relied on eight different forms, which are shown in Table 3. For the forms of general pedagogical knowledge mentioned, the table shows the extent to which the characteristics could be noticed when Anna was observed in the classroom.

*Table 3:*
*Intention realization of a teacher in an upper secondary school*

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
|---|---|---|
| To understand the individual students' learning processes. | *Full* | She often asked questions about what students thought or meant in order to understand them better. |

| Teacher's intention and plans for acting in the classroom | Level of intention realization | Observed teacher behaviour |
|---|---|---|
| To assess objectively and without pressure. | *Partial* | Objective assessment was confirmed. However, the teacher queried the performance of individual students verbally and in writing. As a result, students were er constant pressure. |
| To know the level of development and level of learning of the students. | | |
| | *Partial* | She reviewed the work with the individual students to establish what content they have learned. However, the frontal teaching style that she adopted consistently did not always support individual learning and the development of all students. |
| To perceive each student as an individual. | *Partial* | She created space for individual questions and concerns in the classroom. However, personalized learning did not take place. |
| To use different teaching methods. | *Full* | She worked mainly with a textbook, but also used a variety of teaching methods (concentration exercises, group work, etc.). |
| To act spontaneously in the classroom. | *Full* | She reacted spontaneously to the opinions of students and was able to argue professionally. |
| To deal professionally with disruptions and address challenges directly. | *Full* | She consciously decided which disturbances to react to and which to ignore. She spoke directly, named a problem/challenge in front of the class and gave the students the chance to correct. |
| To place the focus on individuals. To address attitudes and needs openly in the class. | *Full* | She created personal limits and ensured that needs and dissatisfactions were addressed directly. |

Five of the eight intentions that Anna described could be observed in her teaching, while three of them showed up partially. Even though these gaps illustrated differences between intentions, cognitive patterns and actions for this teacher, she realized more than half of her intentions. In addition, in the instances where her intentions were realized only partially, the gaps seemed to be very small.

As with the teachers in the first two case studies presented earlier, Anna was found to apply more GPK than she had explicitly stated. Anna initially named four areas of knowledge – (pedagogical) interaction, classroom management, person, didactics (e.g., intentions). The category Communication (language and body language) was not mentioned. In the category Didactics, the specific areas of knowledge about topics, learning interaction and learning psychology were not mentioned. In the category (Pedagogical) Interaction, multiple sub-constructs were not explicitly mentioned, but she did indicate cooperation to be a specific aspect of her GPK. For Anna, a significant number of GPK aspects manifested in her classroom practice, which she had not explicitly stated during her interview.

The intention-realization rate for this teacher shows that her intentions were realized more than half of the time. Only three of the eight explicitly mentioned intentions and actions could be observed only partially. Small deviations between her original intentions and the actions that followed later could be observed. As with the teachers in the other case studies, the reconstructions also illustrate the application of fields of

GPK that Anna had not explicitly named initially. Similar to the teachers in case studies 1 and 2, Anna exhibited extensive implicit knowledge.

## DISCUSSION

The findings from this study show degrees of intention-behaviour gaps in all three teachers who participated in the study. However, the individual variation between intention and behaviour was quite high, with one teacher realizing almost all his original intentions in the class, another realizing most of her intentions, and a third teacher realizing just over half of her original intentions. Interestingly, during the classes observed, all the teachers also realized GPK that they had not explicitly stated as intentions during the interviews. This finding suggests that the implicit knowledge that teachers bring to the classroom, *and enact during teaching*, even though it is not explicitly planned, may be an important ingredient of supportive learning environments. Even though intention-behaviour gaps were noted, high degrees of adaptability on implicit knowledge utilization in all of the cases were also shown.

The aim of this article was to explore the intention-behaviour gap with regard to the GPK of teachers by conducting a qualitative-reconstructive study. Interviews and observations were used to allow a reconstruction of the cognitive patterns (their intentions) and subsequent pedagogical enacting of teachers (their actual behaviour). The classroom observations enabled insights into the teaching being enacted and provided differentiated insights into potential gaps between the intentions and behaviour of teachers (Helmke, 2009). Even though only three case studies have been presented in depth in this article, similar trends could be observed in all of the initial nine case studies. The teachers were familiar with the interviewer due to prolonged engagement and the nature of the study. However, for the interviews, the teachers had no access to the questions prior to the interview and could therefore not prepare for it. In addition, the ethnographic open approach of the observations presents an object-adequate impression of the school practice of each person studied, since it was conducted within a high-trust environment.

The first case study presented here indicated a high degree of agreement between Max the teacher's intention and his behaviour. An early study on this phenomenon (Ryle, 1949) identified the ability of some teachers to explicitly name the knowledge they will be using in practice. These teachers are able to state their knowledge fairly comprehensively, then apply this theoretical knowledge in practice. Very little difference then presents between their cognitive patterns (e.g., intentions) and pedagogical forms of action.

For other teachers, there are more differences between what they want to do, and what they then actually do in class (Fife-Schaw et al., 2007) as is evident in the second and third case studies presented here. These two teachers mentioned several domains of GPK which they intended to apply in practice, but not all of these areas of knowledge and intentions could eventually be observed in their teaching later. The findings also revealed that all of the participants in this study used *more* pedagogical knowledge in practice than they verbalized initially. There is, however, disagreement in the literature as to the extent to which implicit knowledge should be verbalized by teachers (Polanyi, 1985; Hackl, 2004). In this regard, the current study aligns with the views of Polanyi (1985) and Neuweg (2004/2022) in stating that implicit knowledge cannot be fully verbalized prior to teaching. Rather, such knowledge becomes visible through actions, underlying interactions and physical expressions during teaching (Mead, 1934; Waldenfels & Giuliani, 2000), and it is a critical aspect of supportive learning environments.

Why is this important? Should we even be paying attention to the fact that intention-behaviour gaps exist when teachers enact their GPK? Should the fact that teachers reflexively enact their GPK when it is needed in the class not be sufficient? This study posits that investment in seeking closer alliance between teacher intentions and teacher behaviour during teaching, may potentially improve quality education

(Shaharabani & Yarden, 2019). This argument is also entrenched in views on the professionalization of the teaching profession. Low levels of intention realization in other professions (engineering, medical sciences, law, etc.) are remedied with targeted interventions. In teaching, intention-behaviour gaps should at least be understood in all their complexity. Whilst the dynamic nature of teaching and learning will allow for some fluidity of intention realization, minimizing the intention-behaviour gap can be one way to support teachers and students to actualize successful education outcomes (Dittrich, 2020). Our study sought to provide a detailed and systematic explanation of the internal structures and different behaviour patterns of teachers (Brüsemeister, 2008), their pedagogical intentions and their broad behaviours. The teachers from primary, lower and upper secondary school in our study characterized their GPK by offering multiple perspectives at the individual level. The enactment of their intentions was unique to each teacher. The intention-behaviour gaps depicted here echo the difference between declarative and procedural knowledge (Ryle, 1949) and also between implicit and explicit knowledge (Polyani, 1985; Neuweg, 2022) as found in earlier studies, but they specifically highlight teachers' enactment (or lack of enactment) of their verbalized intentions. Explicit knowledge does not exist as an independent construct, but contains elements of implicit structures (Polanyi, 1985). This is seen in the GPK that was presented by teachers in this study, without having been stated as prior intentions. We know that explicit knowledge can be transformed into implicit knowledge (Neuweg, 2022) as part of the repertoire of teachers' professional knowledge, and thus for the professional actions of teachers (Polanyi, 1985). Our study showed the influence of individual cognitive patterns, self-efficacy, action control and the values of teachers, and what these contribute to a learning environment.

Since students often react to and resonate with a teacher's behaviour (Neuweg, 2022), it is important for goal-oriented and quality education that teachers seek to minimize the gap between their teaching intentions and behaviours. There is a critical need to minimize the theory-practice gap in teaching (Fife-Schaw et al, 2007; Sheeran & Webb, 2016). Some studies (Sniehotta et al., 2005) provide suggestions on how to deal with the intention-behaviour gap, for instance by focusing on action planning as well as improving perceived self-efficacy and action control in teachers. In this regard, cognitive concepts and mental health may play a crucial role in the continued professional development of teachers. Gucciardi (2016) pointed out that mental toughness can enable people to make the most out of good intentions. He also argued that enhancing an individual's perceptions of control over a specific behaviour can enhance the likelihood that they will form strong intentions to engage in the behaviour. He suggests that for people with low intentions, the experiential or affective aspects and instrumental outcomes of engaging in exercises should be emphasized.

According to Fife-Schaw, Sheeran and Norman (2007), changing intentions does not necessarily guarantee any behaviour change. Sheeran and Webb (2016) also add that intention stability is the best indicator of the likelihood that an intention will be realized. In teaching, this means that intention realization will be related directly to the way in which a teacher's teaching intentions remain stable over time – which may in turn contribute to the teacher's behaviour change and full intention realization. Papies (2017) mention two explicit interventions, which take the cognitive processes for behaviour change into account, and which can also be part of teacher education: cueing and training interventions. With *cueing interventions*, the teacher has to change the critical situation for changing cognitive patterns with the help of using positive, goal-related cues, changing social norms of students or teachers or the learning environment in school. With *training interventions*, the existing situated conceptualizations are modified, so that novel memory structures can get activated in a critical situation in order to guide behaviour. This can be utilized in conjunction high qualitative tasks and existing didactic concepts, support reflection and mindfulness-based training of students and teachers as well as have some intention implementation strategies such as 'If-then' plans for responding to varying classroom situations.

## CONCLUSION

This study, which investigated intention-behaviour gaps in the GPK and skills of three in-service teachers, suggests that more prominence should be given to the remediation of intention-behaviour gaps of teachers. Awareness of such intention-behaviour gaps may potentially increase teacher efficacy and ultimately contribute to improved learning outcomes. Educator preparation programmes often place great emphasis on the knowledge and skills development of pre-service teachers (Voss et al., 2015). For reducing the gap, reflexive teachers, who have the capacity to reflect their knowledge as well their acting is required (Dittrich, 2020). The professional knowledge of teachers builds up and develops continuously over the course of a professional biography. For this, teachers have to be life-long learners (European Commission, 2013). It is not possible to make all implicit knowledge explicit, hence, a motivated, mental strong and collaborative teacher is the basis for reducing the intention-behaviour gap. As the findings from this study also revealed, all of the participants in this study used more pedagogical knowledge in practice than they verbalized initially, which suggest that implicit knowledge has an essential role for teachers enacting their GPK.

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