

Article

To Be or Gan a Bheith: An Instructional Coaching Intervention for Irish Secondary Science

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Abstract

In Ireland, most school-aged students are required to take Gaeilge (the Irish language) as a compulsory subject. For some, this is not a favourable experience. This study was designed and structured to help support student teachers who wish to deliver secondary school science through Gaeilge. Specifically, this study used a dynamic and iterative instructional coaching intervention that was designed to be relevant, useful, and meaningful in applying culturally responsive and sustaining teaching practice. Over the course of one university semester, eleven student teachers voluntarily agreed to attend Gaeilge workshops in how to use their Gaeilge in their teaching practice. These ten workshops focused on collaboration between peers using effective pedagogy in meaningful contexts. This research suggests that these student teachers found instructional coaching based on culturally responsive and sustaining teaching practice to be effective. Specifically, it was these student teachers working in collaborative relationships both student teacher to coach and student teacher to student teacher, which improved their confidence and willingness to use Gaeilge. There has been no research into how instructional coaching is able to support Irish student teachers in using Gaeilge in teaching secondary science. This study addresses this gap in the research literature concerning Gaeilge-speaking teachers in secondary science.

Keywords: instructional coaching; culturally responsive and sustaining teaching (CREST) practices; secondary science; Ireland; Gaeilge language learning; initial teacher education

1. Introduction

This paper acknowledges that most teachers [1] and specifically to this paper science teachers [2] learn in much the same way that their students learn. Learning is a lifelong process taking place in both formal and informal settings as it builds on prior experiences. According to [3], “It matters what teachers do . . . What I am not saying is that ‘teachers matter’: this cliché is the most unsupported claim from the evidence of Visible Learning” (p. 15). Ref. [3] made this claim in terms of teachers mattering when they respond in meaningful ways to ensure that learning happens. What we as teachers do matters, but we would argue that it is how and why we do these things that matters more.

Initial teacher education (ITE) in Ireland is the first phase of learning to be a teacher [4]. In this paper, the teacher is a reflective professional, as defined by [4] as someone “able to draw on an integrated knowledge base to improve practice through inquiry” (p. 6). We agree with [5] that teacher identity is constructed “through historical, political and social means that are always shaped by (and shaping of) privileged forms of knowledge and norms” (p. 418). As ITE is the first phase of learning to be a teacher, then ITE is where



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teachers begin to develop knowledge of practice, learning to develop their ability to adapt in class through critical reflection of knowledge in practice, as they plan to be more effective through knowledge for future practice [6].

Ref. [7] highlighted how educational initiatives have suggested instructional coaching “as a viable way to provide sustained and effective professional development support to teachers” (p. 154). While ITE is a well-researched field of study (see, for example, [8,9]) a search of education databases such as ERIC, ProQuest, and EBSCOhost indicated that there has been no research on instructional coaching in the Gaeilge (the Irish language) language learning (GLL) environment of ITE in secondary science education. This paper reports on the design and evaluation of an instructional coaching culturally responsive and sustaining teaching intervention to address the confronting and conflicting issues that student teachers of secondary science have about bringing in more Gaeilge into the classroom.

1.1. Theoretical Framework

Culturally sustaining pedagogy (CSP) is this paper’s pedagogical framework as CSP recognises not only the significance of cultural relevance but also sustaining the students’ cultures in education [10,11]. CSP builds on culturally responsive pedagogy (CRP) [12,13]. CSP goes beyond the cultural responsiveness as it includes the necessity of sustaining cultivation of linguistic practices and perspectives in the educational setting [14,15]. CSP fits within the poststructural approach of viewing these student teachers’ identity as subjectivity. Subjectivity is a notion of self that is multiple, always in progress, and a product of power relations with disunity and conflicts [16].

It is noted that CRP grew out of confronting and conflicting issues that students of colour encountered in predominately Caucasian settings. CRP highlighted that students of colour came with their own heritage and associated cultural practices. These should be seen as assets to the setting. As a result, CSP takes this further to affirm students’ cultural and linguistic diversity [10]. Building on [10,12,13] and several others, ref. [17] offers a comparison of the various terms that have been used in relation to education processes of culturally different students and presents an argument for what they refer to as culturally relevant education (CRE). We, however, agree with [18] on the use of the phrase ‘culturally responsive and sustaining teaching practices’ in their introduction to an issue of Teacher Education Quarterly. In their introduction, this phrase was abbreviated to CRT. We would argue that this would be better abbreviated CREST to give equal weight to both culturally responsive and culturally sustaining teaching. The choice of CREST is based on the evidence that being culturally responsive supports bridging the gap between higher and lower achievers, which in turn raises the overall achievement of everyone [19]. Ref. [19] goes further: “culturally responsive teaching is about making school learning relevant and effective for learners by drawing on students’ cultural knowledge, life experiences, frames of reference, and performance and communication styles” (p. 5). Similarly, being culturally sustaining builds on the students’ cultural and linguistic identities, their lived experiences, and ways of knowing, supporting their self-esteem and sense of self through meaningful learning [20]. Therefore, this paper concerns a CREST-driven instructional coaching intervention with secondary science Irish student teachers in an ITE programme.

1.2. Science Education

Ref. [21] presented a review of teacher professional development programmes in science. Luft and Hewson acknowledged continuing professional development (CPD) needs to understand the connections between policy, teachers, and students. CPD should help teachers and student teachers be more effective in supporting students’ learning by improving not only their knowledge and practice but also their conceptions and beliefs [22].

Ref. [22] underlines how CPD focusing on science teachers has a significant impact on teacher development, including how they implement and use innovative curricula.

As initial teacher education (ITE) educators, we advocate for social justice in education. We position social justice as the “respect for differences between groups and between individuals and the dialectical overcoming of conditions of oppression and inequality” [23] (p. 163). Therefore, ITE should promote, facilitate, and scaffold student teachers as they learn and practice how to be effective teachers. Instructional coaching is one approach that has been used.

2. Methods

2.1. Instructional Coaching

Ref. [24] highlighted what effective instructional coaching in practice looks like. Their focus was English language learners (ELLs) in primary education, but they noted that more research is needed. Significantly for this study, ref. [24] investigated how instructional coaching informed the ways teachers work within and through institutional barriers to change their practices and beliefs. Their work builds on the previous work, such as [25], which noted that what set instructional coaching apart from other models was in how “instructional coaches *teach* others how to learn very specific, evidence-based teaching practices” (p. 103, italics in original). This does not position the coach as the expert working with novices to be trained. Instructional coaching works through partnership based on the seven principles of equality, choice, voice, dialogue, reflection, praxis, and reciprocity [26–28]. As a result, instructional coaching emphasises collaboration, appropriate pedagogical principles to include joint productive activity, and contextualisation as key examples [29].

In instructional coaching, the teachers—or, in the case of this paper, the student teachers—are active participants and co-constructors. This study’s participating student teachers voluntarily agreed and gave informed consent to be part of an ongoing CPD in Term 1 of the 2024 academic year (September to November). The study’s first author acted as a culturally competent and linguistic coach building on what the student teachers came into their ITE programme with in terms of their Irish culture and Gaeilge linguistic backgrounds. The second author acted as an instructional coach to the first author in how to bring CREST practices into the classroom for relevant, useful, and meaningful learning. This process followed an iterative cycle that was nonlinear, dynamic, and socially mediated, as [30] noted that culturally sustaining pedagogies take on “different forms across different cultural contexts with different communities in different places” (p. 367).

As the student teachers volunteered to build upon their Gaeilge linguistic abilities, we would argue that this intervention aligns with [31]’s “specialist coaching” (p. 9). This intervention was a structured process over the length of a university semester to enable the development of a specific aspect of these student teachers’ professional practice, i.e., using Gaeilge in teaching secondary science. This intervention was designed to promote, facilitate, and scaffold these student teachers in using their Gaeilge. It should be noted that for the two fourth-year student teachers who were in school placements all day Monday and Friday as well as Tuesday, Wednesday, and Thursday mornings, their use of Gaeilge could be actionable. For the first- and third-year student teachers, they would have this opportunity when in teaching practice in Term 2, February to April 2025.

To support the instructional coaching, this study was a qualitative dominated mixed methods study [32]. As noted, the participating student teachers were active participants and co-constructors. As such, the intervention responded to student teachers as they built their confidence in using Gaeilge. As this intervention progressed week by week, the qualitative component focused on promoting the participating student teachers’ positive

attitudes towards their Gaeilge abilities. Ongoing note-taking was performed to record what student teachers were able to do each week and where to next based on each week's session. The quantitative component of this mixed-methods study was used to collect student teachers' perceptions of this intervention through an online survey. This study's qualitative data was analysed through thematic analysis [33] based on instructional coaching's three themes: collaboration, pedagogical principles, and contextualisation [29]. The quantitative data was used to support the thematic analysis.

2.2. Participants

The first author is (removed for blind review). He began his lectureship in September 2024 after spending the previous seven years teaching secondary biology and computer science in a Gaelcholáiste (an Irish-medium secondary school). The second author is a primary school teacher who now works as a (removed for blind review), with research interest areas in CSP, working with New Zealand teachers and ITE student teachers to include te reo Māori me ngā tikanga Māori (the Māori language and ways of being Māori) through the relevant, useful, and meaningful inclusion of Mātauranga Māori (Māori knowledge systems) in science. The second author was in Ireland for research and study leave for the start of this intervention.

This study's student teachers were all enrolled into a 4-year Bachelor of Science Education programme. In this programme, students study curriculum content in two different subject areas (such as chemistry and physics, chemistry and mathematics, etc.) along with educational pedagogy to support their learning to become a secondary school teacher. All four cohorts were approached during their first two weeks of lectures in Term 1 of 2024 to enquire about who would be interested in attending workshops in using Gaeilge in teaching science. In Ireland, almost all students in compulsory education take Gaeilge as a required class (see, for example, [34]). Eleven student teachers (out of approximately 150) agreed to be part of this intervention.

This study was granted ethical approval by the Human Ethics Committee (removed for blind review).

2.3. Intervention

As noted, the second author was in Ireland for research. As part of his research, he is interested in showing and supporting New Zealand teachers and student teachers in how to use culturally responsive and sustaining teaching in science education. New Zealand is in the process of undergoing a curriculum rewrite to better align with the 2020 Education and Training Act [35]. This stipulates that schools will work to ensure that their plans and policies reflect tikanga, mātauranga, and te ao Māori (Māori customs, knowledge systems, and worldview, respectively). With only 12% of the teaching force identifying as Māori [36], most of us do not have the lived experiences and indigenous knowledge of tikanga, mātauranga, and te ao Māori. Unlike Ireland, New Zealand does not have a national policy requiring the teaching the indigenous language; it can be studied as a second language like French, German, or Chinese. The second author was in Ireland to talk to student teachers about how and why they use their Gaeilge in the classroom.

Initial conversations with student teachers in their first week of the term indicated that not all were happy with the way Gaeilge was taught in secondary school. For most students, this was a compulsory class. As one student put it, "it was shoved down our throats" while another complained about "stories in English translated to Irish for us to read, no point, no stories of Ireland, no history, just language." A few student teachers noted that they grew up speaking Gaeilge and could have gone to a Gaelcholáiste. A complaint by several of the student teachers was that secondary school Gaeilge was knowledge-based

learning, requiring little understanding and comprehension. It was reported by these student teachers as just learning phrases to pass the assessments; so, for them, they saw it as “not good learning.” This necessitated a change in research focus for the second author. At the same time, the first author was interested in started up a Gaeilge group with the student teachers. All four cohorts were approached for inclusion by the programme through Gaeilge. A follow-up conversation with the cohorts in their second week indicated that only some of these student teachers were able to understand the invitation and only eleven were interested.

This paper’s two authors decided to use this intervention as an opportunity to focus on students using relevant, useful, and meaningful communication. This intervention was an opportunity to use what they know in Gaeilge to be able to communicate better in Gaeilge. By better, we mean student teachers feeling more comfortable and confident in expressing themselves in Gaeilge.

As part of instructional coaching, both the authors set short-term and long-term goals based on the project aims. Short-term goals focused on instruction and were explicitly tied to the GLL cultural proficiency. Ref. [37] highlights “Cultural proficiency is about educating all students to high levels through knowing, valuing, and using as assets their cultural backgrounds, languages, and learning styles within the context of our teaching” (para. 1). The long-term goal was to increase the number of secondary science teachers able to teach in a Gaelcholáiste. As such, this intervention’s short-term goals were to increase oral language and vocabulary-in-use through relevant, useful, and meaningful interactions. It is noted that while part of instructional coaching includes immersive writing and observation [24], these were deliberately not included in this intervention. This intervention had the express intent to work with a group of student teachers in bringing forth their use of Gaeilge. This focus on oral language and vocabulary-in-use was noted by the students and will be addressed. See Table 1 for an outline of the ten-week intervention.

As noted, the purpose and intent of the intervention in Table 1 were not only to show these student teachers the value of their language in the context of teaching (e.g., short-term goal) but also to increase the number of potential teachers able and wanting to teach in Gaelcholáiste (e.g., the long-term goal) [37]. As many of these student teachers commented that Gaeilge in secondary school was based on drills and memorisation to pass examinations, this intervention wanted to show how their language could be brought into their classroom practice. This necessitated drawing on their cultural knowledge, life experiences, and frames of reference [19]. Each week built upon what they experienced in secondary school, but importantly, making this learning relevant and purposeful for their future teaching.

Table 1. Instructional coaching culturally responsive and sustaining teaching intervention.

Week	Coaching Process and Content	Oral Language and Vocabulary in Use
1	Introductions and aims of these workshops: relevant, useful, and meaningful use of Gaeilge. Tell them to talk through the stumble—get the idea across Reach and stretch the language Rote learning will pull up other knowledge from school Bringing up vocabulary as needed	Review of how to talk about where I am from, what I like doing, and what subjects I want to teach. Grammar covered but the main idea is to relax and communicate; describe themselves, what they do every day, and vocabulary about the classroom, simple questions and answers about likes, dislikes and looking for information from someone. Introduction to Is (copula) vs. Tá (substantive). Is duine cliste í vs. tá sí cliste Is muinteoir mé vs. tá mé i mo mhuinteoir An maith leat. . . ? Is maith liom. . . /ní maith liom. . .

Table 1. Cont.

Week	Coaching Process and Content	Oral Language and Vocabulary in Use
2	Review last week's session and bring in using position and movement of speaker to listener: We need to make sure we use real language We don't get obsessed with grammar Some students are engaging and stretching their skills Some are not . . . like one said she didn't like anything Adding new vocabulary as needed	Review of rote learning from secondary school will pull up other knowledge to make connections: vocabulary of direction, position, and movement, vocabulary about the classroom. Is vs. Tá Cad is brí le sin? Cad atá ag teastáil uait? Níor mhaith liom. . . ? An bhfuil . . . uait? Common phrases used in communication
3	Bringing in review and use of verb tenses: present, past, future, and conditional: Student teachers work first in teacher to student interactions then working in pairs Reviewing and adding new vocabulary/phrases as needed	Review of previous structures to make more fluent and natural. Bringing in irregular verbs: Vocabulary of the body, difference between to have ("ag") and to need/want ("ó"). Irregular verb "téigh" to go . . . Go dtí an siopa . . . Chuig an siopa Cad is brí le sin? Litrigh _____ Fuaimniú an focal sin dom? Review and use common phrases
4	Review/revision of verbs, bringing in adjectives (allowing student teachers to add depth to communication)	Using phrases to help student teachers extend and engage in the use of language: irregular verb to do "déan", comparative and superlative of adjectives, phrases. Níl an locht ormsa Rinne mé dearmad ar _____ Cad a dhéanfaidh mé? Cad atá á dhéanamh agaibh? Tá _____ caillte
5	Review/revision of verbs and bring in prepositional pronouns	Students working in pairs and small groups to use Gaeilge to include phrases: irregular verb to get "faigh", useful daily phrases of weather, propositional pronouns and sentences associated with them. Tá sé _____ inniu Lá _____ atá ann Tá sé ag cur _____ inniu Tá _____ ann
6	Review/revision of irregular verbs and tenses, bringing in directional adverbs: position, movement away from speaker, movement to speaker. Bringing in prefixes.	Students working in pairs and small groups: irregular verb to be "bí", directional adverbs, prefixes and prepositional pronouns. Q: An mbíonn tú ag obair gach lá? +) Bím -) Ní bíhm Q: An raibh tú ag obair inné? +) Bhí mé -) Ní raibh mé

Table 1. Cont.

Week	Coaching Process and Content	Oral Language and Vocabulary in Use
7	Review/revision of irregular verbs and prefixes from last week and adding suffixes	Students working in pairs and small groups to practice using phrases, vocabulary with emphasis on prefixes: irregular verb to say “abair”, vocabulary of professions, prefixes, suffixes and prepositional pronouns. Dea Meán Síor Neamh Suffixes: -án/-ín -óg
8	Quick review of irregular verbs and tenses in question/answer exchanges between coach and student and between student and student. Bring in modal verbs.	Students practice using the infinitive of common regular verbs in ‘An Chéad Réimniú’ (Briathra Aonsiollacha = single-syllable verbs), opposites, modal verbs: prepositions (“Réamhfhocail”), irregular verb to hear “clois”. Téigh Nigh Dóigh Múin Dún Bring in opposites pairs
9	Students working in pairs and small groups revising, asking, and answering questions. Bring in extended questions formations.	Irregular verb to eat “ith”, prepositional pronouns, verb vocabulary where we learned the infinitive of common regular verbs in ‘An Dara Réimniú’ (Briathra Dháshiollacha = two-syllable verbs), everyday phrases. Practice with longer questions: An mhiste leat má cuirim mo chóta anseo? An bhféadfainn do scaith báiste a thógail? Ar chóir dúinn a bheith cúin?
10	Review/revision of previous content, then bring in verb plus a preposition structure and additional opposite pairs.	Common grammar structure Fiafraigh (ask/enquire) vs. cuir ceist/iarr ar (request or to ask a favour), irregular verb to see “feic”, modal verbs, An tAinm Briathra (verbal noun). Bain + as = to take from/get from/to extract Cuir + faoi = put under/place under/settle Intervention ends as term finishes

3. Results

These participating student teachers came to this workshop for a variety of reasons. In the initial session, these student teachers were asked why they chose to participate. As the express intent was to use Gaeilge as a medium for teaching science in secondary schools, it is not too surprising that several wanted to have greater fluency in using Gaeilge. Nor was it unexpected that these student teachers already had some level of language ability. What was encouraging was that several noted that this was a potential teaching pathway; as one noted, “it opens doors”. Another responded, it “might be good for after I finish the degree”, implying that teaching in a Aonad lán-Gaeilge (an Irish speaking class within an English-medium school) was a possibility.

3.1. Collaboration

To support collaboration, this intervention took place in the *seomra caidrimh* (can be translated as common room) within the Irish Department. This space is set up with small group tables and chairs and provides coffee and tea to facilitate a relaxed atmosphere. Taking the student teachers out of the science education context and using a communal space where everyone was sitting around a table helped facilitate a more conversational and friendly atmosphere. As the participating student teachers came from different cohorts, their commonality was Gaeilge. Some were more confident in their ability and more willing to participate by asking questions while others were able to answer questions when asked but not confident enough to initiate.

It was not surprising that 33.3% (three of the nine) reported a passion for the language nor was it surprising that almost half wanted to be better or more fluent in the language. In reporting why they were interested in this opportunity, 22.2% noted it would offer a wider range of potential teaching opportunities. What we consider to be more important was that another 22.2% noted the cultural significance of the language and it being more widely used. In addition, another student noted that they were here to be able to practice using Gaeilge, while another student noted that they were here as this opportunity was presented as a group activity. Having this intervention presented as an opportunity to work with what they already had and then build on that in a neutral space was important to these student teachers. CREST acknowledges that the lived experiences and linguistic abilities of students are varied, but holds that teachers are able to support all students to achieve when deliberate and effective teaching is put into practice.

We would argue that deliberate and effective teaching in an educational context is more than just students working together on some activity. Meaningful collaboration needs students in groups small enough so that all are able to actively participate in the learning task. Using the *seomra caidrimh* allowed the students to sit in small groups to engage with the first author to build confidence, then with each other to build self-esteem and sense of self as a Gaeilge speaker. The intervention activities allowed these students to engage in conversation with the first author using structures and vocabulary they would have encountered in secondary school before extending themselves in peer conversations.

It was this collaboration that these student teachers noted helped them being more confident in using Gaeilge. It is notable after ten weeks that 66.7% (six of the nine) felt more confident in their abilities to teach in a *Aonad lán-Gaeilge*, with 22.2% (two of the nine) saying they were already using this in professional experience placement classes. One of the fourth-year student teachers noted that their placement school had a *Aonad lán-Gaeilge*, and after this intervention, they “felt more prepared to deliver a successful lesson in the *Aonad lán-Gaeilge*”, unlike last year. In Ireland, student teachers can register as a teacher in their third year so are able to be paid for teaching that is beyond the programme requirements. This student teacher noted that when this happened last year, they “felt ill-prepared to teach these lessons.” This student teacher further noted that because of this intervention, they felt more comfortable participating in staffroom conversations that included Gaeilge.

3.2. Pedagogical Principles

As indicated above, collaboration in the educational context means not only actively participating but also a learning opportunity. Ref. [29] reported that instructional coaching emphasises pedagogical principles. This paper’s opening sentence states that most teachers learn in much the same way as their students; however, these student teachers are not children. Ref. [38] explains the difference between learners: “Pedagogy is the teaching of children, or dependent personalities. Andragogy is the facilitation learning for adults,

who are self-directed learners. Heutagogy is the management of learning for self-managed learners" (para. 1). Ref. [36] goes further with a table comparing pedagogy, andragogy, and heutagogy principles in terms of dependence, resources for learning, reasons for learning, focus of learning, motivation, and role of the teacher. This intervention was a mix of andragogy and heutagogy principles.

We see these student teachers as adults striving for autonomy and self-directed learning (dependence—*andragogy*). This intervention was focused on building upon what these student teachers brought with them in terms of their *Gaeilge*. The intervention sessions were designed to use their secondary schooling experiences in more relevant, useful and meaningful conversations (resources for learning—*andragogy*). As previously stated, this intervention was an iterative cycle that was nonlinear, dynamic, and socially mediated (reasons for learning and focus for learning—*heutagogy*). These student teachers joined this intervention at different stages of their learning to take on the role of the teacher. Some had been in their programme for only two weeks while others were in the fourth and final year. Four of the nine participants completing the survey noted they wanted to be more fluent in their *Gaeilge* (motivation—*andragogy*). As a result of the previous five principles, the role of the teacher in this instructional coaching was a mix of both *andragogy* and *heutagogy*. This intervention was intended to develop the student teachers' capabilities in *Gaeilge* (*heutagogy*) but was deliberately set up in an environment that was collaborative, respectful, and open (*andragogy*). This intervention was pedagogically grounded to be culturally responsive and sustaining to support their teaching practice through *Gaeilge*.

Ref. [3] noted that teachers matter in relation to what they do to ensure learning happens. This intervention's instructional coaching was a deliberate and considered combination of *andragogy* and *heutagogy*. This was most evident in this intervention's contextualisation.

3.3. Contextualisation

Contextualisation is the connecting of school to students' lives [29]. This contextualisation was the key driving force behind this intervention's design to be relevant, useful, and meaningful. The explicit intent was to build on what these student teachers have (relevant), provide multiple opportunities to use their *Gaeilge* (useful), and do this in natural conversations (meaningful). The intervention's weekly sessions were designed to be culturally responsive and sustaining, to connect what these student teachers experienced in secondary school in terms of more knowledge-based learning with practical comprehension and understanding.

After this intervention, five of the nine student teachers noted that each week's content was useful and meaningful. In addition, almost half noted it was the friendly atmosphere that contributed to these students' learning. As these student teachers came with a variety of backgrounds and experiences, it was not surprising that there was a wide range of content that was highlighted as most relevant. When asked what content was most beneficial to them, each aspect of the weekly sessions was highlighted by different student teachers. Some really found the phrases helpful, others the practice of verbs, and some the keywords, or the structure of the lesson to support conversations, as well as the relaxed atmosphere, to focus on communicating the idea, not focusing on getting it exactly correct. An area of concern for a few of these student teachers was that they could form a sentence, but it was not grammatically correct.

As this intervention was designed to support the use of *Gaeilge*, it was not surprising that 66.7% of the student teachers wanted more opportunities to practice in conversations. We deliberately focused on the oral communication aspects of the language so there were no written components. Overall, 33.3% of the students noted that being able to write

things down would have been helpful. Having things explained orally helped but seeing it written would also support those who are more visual learners. The seomra caidrimh was not set up for this kind of more formal teaching and learning activity. As a result, this intervention is expected to be amended in 2025 into a more formal and recognised teaching and learning opportunity.

Initially, this intervention was presented as an opportunity for student teachers with Gaeilge. As such, it was in an environment that allowed a more casual and relaxed atmosphere. The student teachers found this opportunity beneficial and helpful in using their Gaeilge; however, they want this to continue but as a recognised qualification. In 2025, this intervention is hoped to become a recognised course of study that will allow student teachers to have accredited Gaeilge abilities. This will move the learning back into the science education space, which is better equipped for more formal learning activities. The emphasis will still be on using Gaeilge but will support the opportunity to include instructional coaching's reading and writing activities. This has come to pass where a formal optional module has been created for students in the BEd Science programme to choose.

4. Conclusions

Instructional coaching has professional learning as its aim and has been argued to be a way of supporting all those involved in education [31]. Ref. [28] concluded that their research using instructional coaching with teachers "improved relationships, enhanced practice, awareness, reflectiveness and positive attitude" (p. 338). Ref. [11] highlighted how teachers' knowledge of indigenous knowledge and cultural competencies impacted their positive perceptions. Ref. [19] highlighted how culturally responsive teaching allows the range of learners to all achieve through relevant and effective context. Ref. [20] reported how culturally sustaining teaching builds on cultural and linguistic abilities from lived experiences, supporting self-esteem and sense of self. The student teacher participants in this study would support these claims. Initial teacher education is the first formal step towards taking on the role of the teacher. This role requires a reflective practitioner able to amend, adapt, alter, and occasionally abandon what was planned to ensure that learning happens. Those who come to this profession come with their own personal histories of education, most of whom have experienced formal primary, secondary, and tertiary education. These experiences were most likely in a social context with a curriculum that privileged forms of knowledge [5]. All the participants of this study's intervention engaged in a process to develop a specific aspect of professional learning. For the student teachers, it was the opportunity to use the Gaeilge they brought with them in a planned way but open to co-construction of content. For the authors, it was the opportunity to support student teachers in culturally responsive and sustaining teaching of Gaeilge.

Ref. [31] noted that instructional coaching can be in a group setting but is most effective as one-on-one. This intervention was both. The first author is an experienced secondary science teacher who learned to teach through Gaeilge in a Gaelcholáiste. As such, he brought insight into how he learned to use the language in practice and could role model this to these student teachers. Through teacher-student exchanges using key phrases, vocabulary, verbs, and targeted language structures, student teachers were able to put what they had already been exposed to into relevant, useful, and meaningful practice. The second author worked one-on-one with the first author in how to initially structure then subsequently amend, adapt, and alter the plan in response to the student teachers.

In New Zealand, whakataukī are proverbs or sayings representing the wisdom guiding Māori culture. One such whakataukī is Nāu te rourou, Nāku te rourou ka ora ai te iwi (which can be translated as 'With your food basket and my food basket, the people will

have life'). In the educational setting, the rourou | food basket is a resource that symbolises ako | reciprocal teaching and learning. In Te Ao Māori (the Māori worldview), ako means both to teach and to learn. A notable significance is the order of this whakataukī, as it is their (Nāu) contribution before mine (Nāku) that is more important. So, in terms of this study, the first author did not position himself as the expert with these student teachers the empty baskets to be filled. Had this been the situation, then the first author would not have recognised, acknowledged, or accepted the contributions and ideas from these student teachers. This would have rendered this intervention as a repeat of what they reported to have experienced previously. If this had occurred, it would have severely limited both our learning and theirs as it would have hindered the relationships that were trying to be established and built upon. This significance also applied to the first and second authors. If the second author only saw his knowledge and experiences as important, there would not have been a learning process, so no relationship would have been able to be built and established. Instructional coaching based on culturally responsive and sustaining teaching practices acknowledges that all participants bring a range of experiences and depth of knowledge. It was the co-construction of this intervention that was then amended, adapted, and altered through collaboration with the student teachers that allowed this to be relevant, useful, and meaningful. Together, our (both authors and all student teachers) contributions allowed this to become more than just the sum of its parts, as we all benefitted from these learning opportunities.

We do have to acknowledge the limitations of this study. This was conducted at one institution with a group of student teachers who chose to be a part of this intervention. As such, the results of this study cannot be generalised to the wider student teacher population. This study was also limited as no teaching observations were included, which would have allowed for the opportunities to see how effective these student teachers were in implementing Gaeilge in their teaching practice. However, there was some anecdotal evidence from the two participating fourth-year student teachers, indicating that they felt more confident and capable in using their Gaeilge. It is expected that this intervention will lead to a more formal qualification for these student teachers as Gaeilge secondary science teachers as a means to encourage more students in using Gaeilge in their teaching practice.

This study does highlight how an explicit culturally responsive and sustaining teaching intervention that was designed to support the Gaeilge cultural competencies of these student teachers does positively impact on their ability and willingness to engage with their Gaeilge. Further ongoing studies into how these student teachers continue to teach in and through Gaeilge would be highly desirable. As noted, what we as teachers do matters, but as this study's participants highlight, it is how and why that we argue matter more.

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Abbreviations

The following abbreviations are used in this manuscript:

ITE	Initial Teacher Education
GLL	Gaeilge Language Learning
CSP	Culturally Sustaining Pedagogy
CRP	Culturally Responsive Pedagogy
CRE	Culturally Responsive Education
CREST	Culturally Responsive and Sustaining Teaching
CPD	Continuing Professional Development
ELL	English Language Learner

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