

# Understanding English medium instruction (EMI) policy from the perspectives of STEM content teachers in Kazakhstan

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## Abstract

In this study, the authors address the case of STEM (science, technology, engineering, mathematics) content teachers in an English medium instruction (EMI) environment in Kazakhstan to argue that the professional needs and identities of these teachers are considerably different than the specialist English teachers who teach English language skills and grammar. Therefore, STEM teachers require a different language policy response and diagnosis, and should be understood through a different analytical lens. The study draws on qualitative interviews with one EMI expert and 58 STEM content teachers from six cities or regions of Kazakhstan to present an account of the challenges they confront within mainstream schools. Findings suggest that policies force STEM content teachers to take the role of English teachers, although they are not prepared for that role. These teachers emphasize that their main responsibility is to teach course content, not the English language. As a result, they undergo several dilemmas such as professional [dis]investment and identity crisis, linguistic disadvantages, inferiority complexes, and pedagogical and theoretical limitations. Top-down policies render local teachers and practitioners voiceless

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and disconnected from policymaking. The authors propose a non-traditional, participatory, and non-hierarchical policy framework, where policy actors at different levels collaboratively engage to assess teachers' diverse needs and take contextually informed actions to address the afore-stated dilemmas and challenges.

## 1 | INTRODUCTION

This study examines the case of STEM (science, technology, engineering, mathematics) content teachers in the mainstream government schools in Kazakhstan, which use English medium instruction (EMI). We contend that the professional needs and identities of these teachers are considerably different than the specialist English teachers who teach English language skills and grammar; therefore, we suggest that the STEM content teachers need a different language policy and professional development response, a different diagnosis, and should be understood through an equally different analytical lens. Kazakhstan, like many other countries around the world including non-Anglophone countries where English is a foreign language to most of the local population, has embarked on massive education reforms, marked by a trilingual policy and the use of large-scale English medium instruction (EMI) in schools and universities. The concept of EMI in the present context refers to “the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language of the majority of the population is not English” (Macaro, 2018, p. 37). In Kazakhstan, the rationale behind the drive for EMI was primarily to keep pace with globalization and attendant considerations such as economic competitiveness, integration into the current global cultural economy, internationalization, and development of human capital (Agbo et al., 2022; Karabassova, 2020; Manan et al., 2023, 2024).

EMI has become a global phenomenon in all phases of the educational setting, and its growth has especially accelerated in higher education. More and more universities across the world are now caught up in the rush to adopt EMI policy both at the undergraduate and postgraduate program levels (Dearden, 2015; Macaro, 2022; Macaro et al., 2018; Richards & Pun, 2021; Sah & Fang, 2023). Scholarship on EMI has equally increased over recent decades, covering a diverse range of issues and concerns—global challenges of using EMI in the universities (Aizawa & McKinley, 2020; Doiz et al., 2012; Macaro et al., 2019); English and development (Coleman, 2011; Erling & Seargeant, 2013); EMI as a growing global phenomenon (Dearden, 2015; Sahan et al., 2021); EMI and the internationalization of universities (Bowles & Murphy, 2020; McKinley & Galloway, 2022); global views about EMI (Macaro et al., 2019); systematic reviews of EMI policies (Macaro, 2018; Macaro et al., 2018); EMI and teachers' emotional challenges (Hillman et al., 2023); policies, politics, and ideologies of EMI (Sah & Fang, 2023); and EMI and teacher agency (Manan, 2020; Manan et al., 2020; Sah, 2023).

As stated before, a growing amount of scholarship conducted on EMI across a wide range of contexts demonstrates the phenomenon not only opens opportunities and affordances for the learners, but also presents challenges for both teachers and learners where it is implemented. In Kazakhstan, as in other countries, EMI policy in schools and universities confronts a range of challenges (Agbo et al., 2022; Karabassova, 2020; Manan et al., 2023, 2024; Tajik et al., 2023).

Education policymakers in particular tend to pin rather higher hopes on the teachers expecting them to transform schoolchildren into active agents, who, in the policy makers' views would in turn participate actively in a globalized economy and contribute to national economic development (Hamid & Nguyen, 2016).

In the context of Kazakhstan, one of the most important aspects that has been overlooked or barely attended to amidst all the heated debates around the transition to the EMI policies, practices, and enactment successes and failures is the dilemma of what we describe as *STEM content English teachers*. We use this term to refer to teachers of such subjects as physics, biology, or mathematics, whom the government obliges to teach in the English language under the EMI framework. These teachers are doubly burdened as the policy not only demands them to master their subject content, but also to master the English language to the extent that they can simultaneously take good care of students' content learning as well as their English language needs in the challenging context where EMI is a relatively recent phenomenon (Smagulova, 2016).

In this article, we draw on STEM content English teachers' voices to situate the dilemmas that they confront, and present an account of the professional, linguistic, theoretical, and pedagogical challenges they undergo, concluding with a discussion the way forward for addressing their problems and needs within the EMI policy and planning framework. Precisely, we provide an analysis of fundamental factors in the EMI framework and contextualize the problems of the STEM content English teachers in Kazakhstani mainstream schools, and emphasize the importance of understanding why and how these factors are crucial before expecting the EMI policy to work and achieve the desired results. More importantly, a thorough analysis of these teachers' responsibilities can also help us dissect the EMI policy more systematically, spotlighting the nuances of STEM content English teaching, rather than discussing all English teachers in a generic way. The following research questions guide the study:

- How do STEM content English teachers in mainstream schools respond to the EMI policy in Kazakhstan?
- What are their main concerns and challenges in enacting the EMI policy?

## 2 | STUDIES ON STEM CONTENT TEACHERS

The challenges and expectations from STEM teachers in the EMI context, as indicated above lines, are not only Kazakhstan-specific, but they are widely spread across the non-Anglophone world. An array of studies across a wide range of contexts and countries explores STEM content English teachers' concerns related to their linguistic and pedagogical capacities, their professional development, and their professional identities (Block & Moncada-Comas, 2022; Dickson & Litz, 2023; Jo et al., 2024; Lee & Stephens, 2020; Pun et al., 2024; Rahman & Singh, 2022; Richards & Pun, 2022; Roothoof, 2022; Ting, 2022). Block and Moncada-Comas (2022) studied STEM lecturers' self-positioning about their professional identities in Catalonia. The study concluded that the lecturers aligned themselves with their academic disciplines as they drew on their understandings of their rights, duties, and obligations as STEM discipline-bound lecturers. Thus, they accepted the EMI gaze, whereas they showed resistance to the narrow English language teaching (ELT) gaze. In another related study, Rahman and Singh (2022) investigated STEM teachers' and students' language-related ideologies about translanguaging at a private EMI university in Bangladesh. The study problematized the mismatch and tension between macro-level monolingual ideologies and micro-level stakeholders' ideologies of translanguaging in STEM

pedagogy. The study argued for a departure from monolingual ideologies and underlined the need for accepting bilinguals' language practices and their linguistic rights, and recommended creating spaces for a more flexible and inclusive language policy. In a similar study, Roothoof (2022) compared the beliefs of STEM lecturers with those of humanities lecturers about EMI in Spain. The findings suggested that most teachers focussed more on subject content than on the language. The study found differences in the approaches of the two groups of teachers in terms of teaching style and first language (L1) use. As compared to the STEM teachers, the humanities teachers tended to impose stricter controls on L1 use. Jo et al. (2024) explored EMI in STEM disciplines in South Korea, and concluded that certain EMI pedagogy methods could help ameliorate the excessive pressure on students and teachers so that they could enjoy the EMI education policy.

### 3 | POLICY FROM BELOW: THE PUBLIC SPHERE PARADIGM

Our data collection and data analysis is based on the premise that language policy and planning (LPP) can best be studied and understood from the analysis of the micro-level actors and their actual practices—essentially, the teachers and students themselves (Baldauf & Liddicoat, 2008; Hornberger & Johnson, 2007; Johnson, 2013; McCarty, 2011). Viewed as a *public sphere paradigm* (Tollefson, 2013), this approach towards the study of LPP mainly challenges the traditional ways of viewing policy from a “technocratic perspective” (Johnson, 2013, p. 96). A technocratic perspective conceptualizes LPP as a top-down process that is influenced exclusively by the intentions of the policymakers. Such a perspective also “assumes the intentions of the policymakers are knowable, and renders powerless those who are meant to put the policy into action since they are portrayed simply as ‘implementers’ of a policy over which they have no control” (Johnson, 2013, p. 96). However, in contrast, the non-traditional participation framework (Johnson, 2013) set forth in a “new wave of language education policy research” considers teachers as “the final arbiters of language policy implementation,” and focuses mainly on “agency in implementation” (Menken & Garcia, 2010, pp. 1–2). The theoretical underpinning is that LPP is a dynamic, socially negotiated, complex, and multilayered process because there are many actors involved at local levels in its creation and implementation. Therefore, LPP research should shift focus from top-down government policies to bottom-up policy practices, focusing on “local school administrators, teachers, students, parents, and community members” (Menken & Garcia, 2010, pp. 1–2). Engagement with the local actors is significant because local actors such as teachers have a much better, clearer, and more critical understanding of the language-related policies and problems on the ground than the policymakers have. Therefore, effective policymaking and implementation requires a much deeper engagement and participatory approach among various policy actors—macro, meso, and micro (teachers).

### 4 | CONTEXT OF THE STUDY

Kazakhstan is a large, strategically positioned, and economically stable post-Soviet country. Although it possesses great ethnic and linguistic diversity, Kazakh and Russian are the only languages given official status in the country's legislation—Kazakh is the state language, and Russian is an official language of interethnic communication. Kazakhstan has historically sustained a multicultural and multiethnic community (Fierman, 2006). As in many other

post-Soviet countries, the Russian language still holds a prestigious position, and it emerges as the natural language for upward socioeconomic and sociocultural mobility (Fierman, 2006). The educational landscape was massively transformed by a trilingual policy initiatives by which English, a foreign language, became the language of instruction in selected schools and universities (Agbo et al., 2022). The emergence of English is a relatively recent phenomenon in Kazakhstan (Smagulova, 2008). The emphasis on English has been mainly driven by two assumptions: that English serves as a universal lingua franca, and that English language competency is essential for individual economic returns and national economic development (Goodman & Karabassova, 2018). Globalization and its attendant imperatives, particularly competitiveness, are also seen as the key drivers behind the educational reforms, where the “government policy for educational reforms is viewed not only as a means of convergence, that is, catching up with the knowledge-based societies of Europe and North America, but also as a gateway into the EU” (Agbo & Pak, 2017, p. 14). In this scenario, the policymakers believe that English-medium education can give a competitive advantage to Kazakhstani citizens in the current global cultural economy. For instance, most speeches of the former President Nazarbayev testify to the government’s vision about the important role English would play in the country’s socioeconomic, educational, and scientific advancement. The president declared that

A nation that does not have access to main information cannot be competitive. This is the law of the 21st century. Therefore, citizens working in science, medicine, and civil service should rapidly learn English.

(Nazarbayev, 2015, as cited in Karabassova, 2020)

In 2007, the first president of the country, Nursultan Nazarbayev, introduced a project called *the Trinity of Languages* (Karabassova, 2020). The trilingual policy aimed at trilingual competence, calling on future generations to acquire fluency in three languages, namely, Kazakh, Russian, and English. These reforms were introduced at the school and university levels. STEM subjects, such as physics, chemistry, biology, and computer science, were to be taught through the medium of English following partial or full immersion bilingual teaching models (Karabassova, 2020; Mehisto et al., 2014). An essential component of the reform was teachers’ professional development, for which the Ministry of Education and Science (MoES) set up a total of 33 specialized *Daryn* schools for gifted children that would pilot the program. Moreover, 29 Bilim-Innovation Lyceums (BILs) and 20 Nazarbayev Intellectual Schools (NISs) were designated trilingual schools that could serve as models for the reform implementation. In 2016, STEM teachers from mainstream schools started attending 3, 6, and 9 months of professional development courses, where they received training to learn English and teach STEM subjects via the English language.

Several problems and challenges were identified in how teachers’ professional training was conducted. For instance, Karabassova (2020) has observed that the trilingual education policy existed mainly as a discourse rather than as a specific policy document with clear implementation guidelines. For instance, the Ministry of Education and Science (MoES, 2015) developed the “Roadmap for the Development of Trilingual Education in Kazakhstan for 2015– 2020”. The main goal of the project was to systematically implement trilingual education at every level of education in the Republic of Kazakhstan. Although this formal official document was termed a roadmap, which all other organizations and concerned researchers would use as a reference for action, it failed to “communicate any expected outcomes, milestones, or key indicators to the stakeholders” (Karabassova, 2020, p. 3).

## 5 | METHODOLOGY

### 5.1 | Research site and participants

This study took place in six cities in Kazakhstan, covering different regions of the country. These cities were Astana, Karaganda, Almaty, Kokshetau, Pavlodar, and Shymkent. After the site selection process, we approached school gatekeepers through phone calls for the recruitment of participants. Using a purposeful sampling strategy with maximal variation, we were able to select as many as 58 STEM content teachers from the schools chosen to participate in one-on-one interviews and focus group discussions. Purposeful sampling with maximum variation can be useful, as the researcher samples cases or individuals that differ on some characteristic or trait (Creswell, 2014). This sampling strategy helped us “to explore the variation within the respondents and also underscore commonalities” (Dörnyei, 2007, p. 128). We conducted a total of 10 individual interviews and 15 focus group discussions. The number of participants representing focus group discussions varied, depending on the number of available teachers in different schools. Each one of the teachers participated only once in the focus group discussions. The main reasons for relying largely on focus group discussions were to fit our schedules to teachers' overloaded schedules, as well as to obtain rich data from a group of teachers simultaneously. The main criteria for each focus group discussion were to get a maximum of 5 teachers of different STEM subjects preferably speaking the same language for the purpose of the interview. The criteria for selection of the participants included (i) the teachers currently teach their subjects in English as the primary medium of instruction, (ii) there are maximum variations in terms of gender (male and female), experience (novice and experienced teachers), and subjects (different STM subjects), and (iii) they are willing to participate in the study voluntarily. After these teachers agreed to participate in the study, we obtained consent forms from them, ensuring compliance with ethical rules.

In addition, we also recruited an expert who is internationally known for his research, expertise, and experiences in EMI policies, covering a wide range of contexts across Asia. The main reason we recruited the key expert was to gather his insights into understanding the challenges of the content English teachers, and eliciting his perspective on possible policy measures that could effectively address these challenges. Our assumption was that the EMI experts' insights would help us to understand the complex local issues and challenges of Kazakhstani teachers from the viewpoint of an international expert, linking local issues to the broader debates related to the theory, policy, and practices of EMI. In addition, the way the EMI expert would explain the nuances, mis/perceptions, and fallacies about content English teachers, could potentially help inform various stakeholders grappling with EMI challenges. Tables 1 and 2 illustrate participants' information.

### 5.2 | Research design, data collection, and data analysis

Given that our study aimed to explore the response of the STEM teachers in the EMI context, the challenges they face, and the concerns they voice about the enactment of the EMI policy in their respective schools contexts, we deemed a qualitative research design relevant and fitting, as it allows researchers to “explore a problem and develop a detailed understanding of a central phenomenon” (Creswell, 2013, p. 16). Accordingly, the research tools used in this study such as semi-structured interviews and focus group discussions with the participants (content English

TABLE 1 Teachers' information.

Pseudonym	City	Subject	Work experience	EMI training course duration	EMI since	Interview type
Marzhan	Astana	Biology	3 years	9 months	2019	FGD
Zarina	Almaty	Chemistry	12 years	9 months	2018	FGD
Malika	Almaty	Chemistry	—	9 months	2018	FGD
Sofya	Pavlodar	Physics, Math	18 years	9 months	2019	FGD
Lyazzat	Astana	Math, Computer Science	21 years	9 months	2019	FGD
Alua	Pavlodar	Biology	—	9 months	2019	FGD
Aizhan	Pavlodar	Biology, Chemistry	20 years	9 months	2019	FGD
Ainash	Pavlodar	Math, Computer Science	14 years	9 months	2017	FGD
Dinara	Pavlodar	Math, Computer Science	5 years	1.5 months	2017	FGD
Anuar	Pavlodar	Computer Science	14 years	9 months	2017	FGD
Aidana	Pavlodar	Computer Science	14 years	6 months	2017	FGD
Dayana	Almaty	Chemistry	30 years	3 months	2010	FGD
Karina	Almaty	Chemistry	25 years	3 months	2006	FGD
Bolat	Almaty	Physics	6 years	Did not attend	2015	FGD
Aigerim	Kokshetau	Physics	3 years	Did not attend	2019	FGD
Sholpan	Kokshetau	Chemistry	1 year	Did not attend	2021	FGD
Murat	Kokshetau	Computer Science	22 years	3 months	2011	FGD
Alina	Shymkent	Physics	10 years	3 months	2016	FGD
Aiman	Shymkent	Biology	14 years	3 months	2017	FGD
Gauhar	Shymkent	Biology	15 years	Did not attend	2016	FGD
Marina	Shymkent	Math, Computer Science	3 years	2 months	2017	FGD
Regina	Almaty	Biology	25 years	9 months	2016	FGD
Allin	Almaty	English	3 years	Did not attend	2018	FGD

(Continues)

TABLE 1 (Continued)

Pseudonym	City	Subject	Work experience	EMI training course duration	EMI since	Interview type
Zhanat	Shymkent	Chemistry	26 years	7 months	2017	FGD
Kanat	Shymkent	Computer Science	8 years	9 months	2018	FGD
Zhanar	Shymkent	Physics	17 years	3 months	2017	FGD
Elmira	Shymkent	Chemistry	29 years	9 months	2018	FGD
Anara	Karaganda	Computer Science	8 years	9 months	2018	FGD
Serik	Karaganda	Computer Science	7 years	9 months	2018	FGD
Aida	Karaganda	Chemistry	7 years	9 months	2018	FGD
Nadiya	Karaganda	Biology	12 years	9 months	2018	FGD
Daniya	Karaganda	Biology	25 years	9 months	2018	FGD
Mariya	Karaganda	Physics	—	6 months	2018	FGD
Tolkyn	Karaganda	Biology	25 years	3 months	2017	FGD
Darya	Karaganda	Physics	14 years	3 months	2018	FGD
Ramina	Karaganda	Chemistry	18 years	6 months	2018	FGD
Adina	Karaganda	Computer Science	—	9 months	2018	FGD
Raushan	Pavlodar	Physics	8 years	3 months	2017	FGD
Gulim	Pavlodar	Biology	7 years	3 months	2017	FGD
Ainur	Pavlodar	Computer Science	5 years	3 months	2017	FGD
Amina	Kokshetau	Biology	22 years	9 months	2017	FGD
Tansholpan	Kokshetau	Biology	30 years	9 months	2017	FGD
Adelya	Kokshetau	Chemistry	—	9 months	2017	FGD
Aisha	Pavlodar	Chemistry	21 years	9 months	2018	FGD
Ulzhan	Pavlodar	Biology	15 years	9 months	2017	FGD
Mira	Shymkent	Biology	16 years	9 months	2018	FGD
Gulnara	Shymkent	Chemistry	12 years	7 months	2018	FGD

TABLE 1 (Continued)

Pseudonym	City	Subject	Work experience	EMI training course duration	EMI since	Interview type
Saule	Shymkent	Physics	9 years	9 months	2017	FGD
Maryam	Almaty	Computer Science	30 years	6 months	2017	Individual
Rakhat	Almaty	Physics	10 years	3 months	2019	Individual
Ivan	Almaty	Biology	39 years	—	2008	Individual
Nazira	Kokshetau	Chemistry	17 years	4 months	2018	Individual
Anton	Kokshetau	Computer Science	—	4 months	2017	Individual
Aliya	Astana	Biology	5 years	Did not attend	2019	Individual
Aziza	Almaty	Computer Science	5 years	3 months	2016	Individual
Daniyar	Astana	Physics	6 years	3 months	2017	Individual
Baurzhan	Astana	Physics, Math	2 years	Did not attend	2020	Individual
Nurrai	Astana	Physics	4 years	Did not attend	2018	Individual

Note. FGD = Focus group discussion.

TABLE 2 Expert's information.

Pseudonym	Position	Professional interests
Rahman	Associate professor	Research on language policy and planning, EMI, language and education

teachers) helped us to collect in-depth, rich, and descriptive data from a relatively small sample (Creswell, 2013). We also considered a qualitative approach more suitable for answering the research question as it is exploratory, emergent, and flexible in nature (Dörnyei, 2007). Because qualitative design seeks to study “things in their natural settings” (Denzin & Lincoln, 2011), it can enable “researchers to get at the inner experience of participants, to determine how meanings are formed through and in culture” (Corbin & Strauss, 2008, p. 12). Other advantages of qualitative design include its ability to help researchers to gather information-rich data for the report and obtain an in-depth understanding of the participants' contextualized experiences of the phenomenon that is under investigation (Dörnyei, 2007). A set of questions (see Appendix A) guided the semi-structured interviews and focus group discussions. We conducted the interviews in Kazakh, Russian, or English languages according to the preferences of the participants. With the participants' permission, we audiotaped all the interviews and transcribed them for analysis.

To analyze the recorded interviews, we utilized Clarke and Braun's (2014) six phases for conducting thematic analysis. Thematic analysis refers to “a method for identifying and interpreting patterns of meaning (themes) across qualitative data” in rich detail (Clarke & Braun, 2014, p. 218). This analysis proceeds according to following steps: becoming familiar with the data, generating initial code, identifying, reviewing, and defining emerged themes, and producing a report. Before analysis, we translated the Kazakh and Russian transcripts into English to better understand the data. Since most of the interviews were conducted in Kazakh and Russian, the research team and hired professionals first transcribed the data, and then translated the non-English transcripts. Having become familiar with the data, we then proceeded to examine the transcripts to generate initial codes that were aligned with the research questions. Once all the themes had been identified, we selected the most relevant quotes and organized them under each theme. Thus, in this article, we present only those themes which closely link to the STEM content teachers' challenges around the EMI policy (e.g. professional investment, identity tensions, and linguistic, pedagogical, or theoretical challenges).

### 5.3 | Positionality

Scholars in applied linguistics have emphasized the importance of increased reflexivity in qualitative research (Consoli & Ganassin, 2023). This means that researchers should practice reflexivity by being aware of their own role “as both inquirer and respondent, as teacher and learner, as the one coming to know the self within the processes of research itself” (Lincoln et al., 2011, p. 143). By doing this, researchers avoid taking a pseudo-objective or an absolute or rigid position (Clark & Dervin, 2014). We (the researchers of this study) are not originally from Kazakhstan, but we currently work as faculty members at one of the highly reputed EMI universities in Kazakhstan. We recognized the need to understand the experiences of STEM content English teachers in Kazakhstan, mainly because the government requires content courses to be taught in English under the EMI framework and the voices of these schoolteachers in Kazakhstan are still

under-researched. None of the participants in the study was known to the researchers. Local research assistants helped us with the recruitment of the teachers, data collection, data translation, and data transcription. The findings and recommendations of this study can provide valuable insights to teachers and policymakers in Kazakhstan and Central Asia, as well as to the authors themselves, who have conducted extensive research on EMI in different parts of the world.

## 5.4 | Ethical considerations

We adhered to ethical guidelines and principles to protect the participants' free choice, rights, and well-being. We sought and received approval for the conduct of the study (the name of the ethics approval body is undisclosed for confidentiality purposes). As researchers, we placed equal emphasis on the ethical dimension of the study by reflecting on any personal biases, assumptions, or values that could potentially influence the research process and findings. We personally trained the research assistants who transcribed and translated the interview data. These assistants were fluent in English and the local languages. Before starting their role in this study, the research assistants completed the Collaborative Institutional Training Initiative (CITI) training course that ensured their in-depth understanding of research ethics. To ensure trustworthiness and obtain accuracy, we met three times to review and discuss the initial coding scheme and resultant themes based on the participants' transcripts. We ensured not only the accuracy and honesty of the research findings but also the anonymity of the research sites and participants by obtaining permission from official gatekeepers and informed consent from all participants, avoiding harm and disclosing any potential conflicts of interest. We used pseudonyms for both the research sites and participants to protect their identities.

## 6 | FINDINGS

The following three themes emerged as the most recurrent problematic areas with respect to the participants, whom we viewed as *surrogate teachers*: professional [dis]investment and identity crisis; linguistic challenges and inferiority complexes; and theoretical and pedagogical limitations. The quotations presented in this section are from both individual interviews and focus group discussions. [Figure 1](#) illustrates the theses, here called *dilemmas*.

### 6.1 | Professional [dis]investment and identity crisis

Based on our interaction with the teachers, some statements recurrently emerged where teachers indicated how they positioned themselves in the overall policy project of the EMI, and how they identified themselves with the English teacher role that is expected of them. These statements included the following:

- “We are basically not English teachers.”
- “Our main job is to teach content.”
- “Content is more important for us than the language.”
- “We haven't spent much time on English learning.”

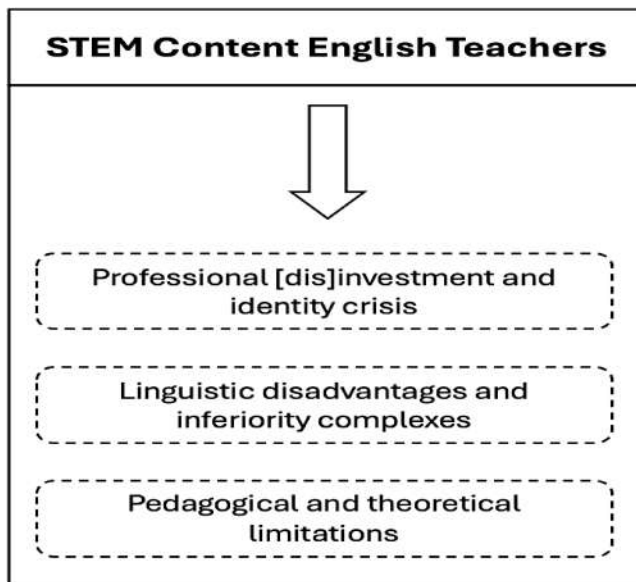


FIGURE 1 STEM content English teachers' dilemmas.

One teacher said that “Not everyone has the aptitude to study languages. They think they are Chemistry and Biology teachers; they know only terminology in English” (Karim, School 1, Almaty, December 6, 2021). As a result of their subject-specific specialties, and long-term investment in studying the same subjects, these teachers cultivate their professional identities mainly as physics, biology, or other STEM teachers rather than as English teachers. The following extracts from interviews illustrate lack of professional readiness for the implementation of EMI policy. One teacher questioned the policymaking approach as hurried, unrealistic, and directionless:

The reform was implemented without proper preparation. So, I believe that Kazakhstani schools are not ready for such a program. We are demanded to implement such a crucial policy, yet we don't receive enough support. If things continue to be in this way, the policy will not succeed.

(Karina, School 4, Almaty, December 9, 2021)

Another teacher revealed that in general, teachers feel immense pressure and take much more time preparing for English language lessons than they would do for their subject teaching. She added that “we spend too much time educating ourselves. But everyone cannot do that” (Alua, School 2, Pavlodar, May 5, 2022). Another teacher referred to the challenges, and called for more support and investment from the government:

We need to have some sort of support. English language is not our first language. It's not our first subject that we are teaching. It's not even the second subject. That's why it is difficult.

(Anara, School 4, Almaty, December 9, 2021)

Teachers also understood that the centralized or bureaucratic manner of policymaking from the top had rendered them voiceless in the decisions around policy designing, teachers' needs, and the

amount of time, resources, and support teachers might have required to implement the policy as desired by the government. One teacher contended that “We are simply worried about how fast the reform is being implemented. I wish the implementation process was more gradual, providing us good resources and teaching materials.” She also emphasized that “Teacher community must take part in the decision-making” (Mukkadas, School 2, Almaty, December 6, 2021). Similarly, another teacher shared her early experiences of the policy implementation in the following words: “In the beginning we were shocked. We don’t have the basic skills, we all studied German at school and at college, we had English only at the university and it was taught poorly” (Amina, School 2, Pavlodar, May 5, 2022). The policymakers plan to implement 100% English immersion in the whole country without piloting or testing work. For instance, one teacher remarked that,

They should have done a good piloting first, then monitor the results, identify all the pros and cons, problems, work on them. ... I don’t think it was right to have a 100% immersion program just after two years of human resources preparation.

(Sabina, School 2, Pavlodar, May 5, 2022)

In addition to teachers’ concerns about their professional identities and about investment/disinvestment as content teachers, insights from our key expert (Rahman, a pseudonym) whom we interviewed for this study also taught us to understand the complex workings of what he described as *surrogate teachers*. The concerns shown by our teacher participants resonated with the expert’s interviews. His commentary on the challenges of these teachers is revealing. For instance, he categorically stated that “these teachers are neither language experts nor language teachers” (Rahman, March 11, 2022). In fact, they are *content experts*, but the policies and systems erroneously

... hold them responsible for teaching language, developing English language proficiency of the students, that’s why they are called surrogate teachers. They are not real language teachers, they can’t be.

(Rahman, March 11, 2022)

According to Rahman, there could be three kinds of response to the dual role the policy makers generally assign to the surrogate teachers. These teachers can be described as *rigid*, *sympathetic*, and *assertive*. Temperamentally as well as attitudinally, *rigid* teachers are generally reluctant to assume the full responsibility of teaching both content as well as English. For instance, a mathematics teacher might take a rigid position by saying that “my job is not to help with the language, I’m the mathematics teacher, and I will teach you mathematics” (Rahman, March 11, 2022). *Sympathetic* teachers would treat English-disadvantaged students with some form of sympathy by saying,

“Well, I don’t have the expertise, but if I don’t help my students, who will help them?” That is an expression of agency. “Let me do something as much as I can.” So, probably, the teacher will do something more. (Rahman, March 11, 2022)

*Assertive* teachers might say, “Well, I can’t do it, I can’t teach in English, so I have to teach in my language, whatever language students have proficiency in” (Rahman, March 11, 2022).

Thus, Rahman provided useful theoretical insights into the complexities around the surrogate teaching. He argued that the simplistic assumption that language learning and language

teaching were two similar exercises is problematic and tantamount to imposing a bureaucratic policy on such teachers from the top (policymakers/administrators), and generally backfires unless policymakers engage with them in a dedicated way and professionally prepare them for the new policy or reform. Rahman is critical of the way the policymakers handle policies about these teachers. Generally, he points out, they

... force content teachers to take the role of language teachers. But they are not language teachers. That is why the surrogate teachers need a different policy and planning approach, unlike what is usual for language teachers.

(Rahman, March 11, 2022)

Overall, the insights gained from both the participant teachers and from Rahman (our key expert) are significant because they expose the complexity of the problem. The extracts from teachers' interviews clearly sum up how they perceive themselves as English teachers, how they identify themselves with the English language, what subject areas stand as their main identity signifiers, and the extent to which they feel invested in English language learning and teaching. These teachers find EMI policy challenging because most of them have had limited professional investment and training in teaching content through English. In professional terms, they have been trained and groomed as specialists in their respective content subjects such as mathematics, physics, biology, and computer science, the subjects that stand as their major professional forte and their primary identity markers. We can conclude that *professional disinvestment* results in these teachers' *identity crisis*.

## 6.2 | Linguistic disadvantages and inferiority complexes

Teachers admitted that they confronted serious challenges with the use of English. As discussed in the preceding section, these teachers have largely received their academic education and specialized degrees in either Kazakh or Russian. Although they studied English as a subject during their studies within the schools and beyond, they did not develop English language proficiency to the extent that they can teach academic subjects such as STEM through the medium of English. For the more senior teachers, English was a completely new language; during Soviet times, German was the most common foreign language taught in schools. For instance, one participant explained as follows:

I mainly studied German, both at school and university. After that, in 2017, the Ministry of Education sent us to special courses because the STEM subjects had to be taught in English. In 2017, I studied English for four months in the *Orleu* training course. Of course, it was very difficult for me at the beginning because I studied only German before.

(Anton, School 1, Kokshetau, April 4, 2022)

We found that most of the participant teachers were short of confidence. They they showed hesitation to use English and, instead, preferred to introduce themselves in their first languages, Kazakh and Russian. A few others who started to use English quickly faltered, and faced difficulties in introducing themselves in the English language. One of the teachers revealed that

We have learned German before. At first our students laughed at us, there was so much stress, I was ashamed of speaking and reading out loud. I understood what people were talking about, but speaking was stressful for me.

(Symbat, School 1, Pavlodar, May 5, 2022)

Teachers reported that they had little or no problem with reading or listening, but they found it difficult to speak in English. One teacher referred to the issue by saying that teachers did not get sufficient time to adapt to the policy and understand it well, and therefore “they are still experiencing high stress levels and they don’t understand the advantages of this policy” (Karina, School 4, Almaty, December 9, 2021). They said English was a “barrier” for them. During the professional training courses they attended, they were perhaps provided the environment to use English for communication; however, the short-term courses, lasting from 3 to 9 months training, were insufficient for them to develop a functional level of proficiency in the language. Moreover, these teachers rarely find people in their workplaces to speak English with or with whom they can participate in any English-related activity. So they only use English while conducting classes, and we observed that their English language exposure was mainly limited to the use of terminologies. Another possible reason for most teachers’ hesitation to converse in English was fear of being judged by listeners. They seemed to be afraid of making mistakes in their English conversations. Overall, the linguistic and resultant emotional challenges these teachers face resonate with most other studies on EMI in a wide range of contexts where English is either a second or a foreign language to teachers and learners (Aizawa & McKinley, 2020; Doiz et al., 2012; Macaro, 2022; Macaro et al., 2019; Richards & Pun, 2021).

### 6.3 | Pedagogical and theoretical limitations

We found that alongside low English language proficiency challenges, teachers also referred to the pedagogical and theoretical limitations of the professional training they received. They complained that the training courses narrowly focused on their English language skills, and they hardly received any exposure to the disciplinary knowledge in related pedagogies or theories such as content-based instruction (CBI), content and language integrated learning (CLIL), or language management in multilingual classrooms. For instance, one teacher observed that

The mentor/trainer was an English teacher, not a STEM content teacher. It felt like we were being graded by someone who achieved a lot in English. Like an English competition winner.

(Sofiya, School 2, Pavlodar, May 5, 2022)

There was ambiguity around this aspect as teachers admitted that they did not receive rigorous or extended training and theoretical understanding of the CLIL pedagogy. The CLIL component of the training either lasted for a short period of time (a few weeks only) or did not happen at all:

Those courses that I attended didn’t contain a CLIL block. We didn’t study CLIL. We only had General English in one block, then another block was about professional English in Physics. No methodology in the courses, just language. But some others had learned about CLIL.

(Darya, School 1, Karaganda, November 1, 2021)

It is important to highlight too that the given training even failed to sufficiently address and train them about all the four language skills as it predominantly focused listening and speaking skills, leaving the most essential academic skills of reading and writing unaddressed. Some teachers even compared both experiences, pre-EMI and post-EMI, as normal versus abnormal. For instance, one teacher said that they were no longer teaching content in the old “normal” ways. For them, teaching content through English language was not a usual or normal pedagogical exercise. This points to the complexity of the challenges and calls for a distinct policy response. Teachers also complained that they were not provided enough support in material provision such as books, lesson plans, and other resources, nor did they receive any clear guidance about the EMI implementation in the classroom. Particularly, they emphasized that the unavailability of methodology books or teaching manuals made their teaching even harder:

There aren't any methodological tools explained in these textbooks. That's why sometimes we don't know how to teach children. We are not English language teachers; hence, we struggle a lot.

(Serik, School 2, Karaganda, November 2, 2021)

The participants problematized the policy of teacher certificates and showed dissatisfaction over trainee teachers' English language assessment tests. There was a lack of transparency and consistency, as the professional training took place in different training institutes; therefore, the ultimate assessment policy was far from being uniform and consistent. Some teachers revealed that the level of English proficiency which they obtained during training courses did not correspond with their actual level of language proficiency:

As a teacher trainer, I know that there are many teachers who received certificates, but as a trainer, I also know that not every teacher's proficiency corresponds to the one reflected in the certificate. Some teachers are not that good at English.

(Maryam, School 3, Almaty, December 8, 2021)

As Richards and Pun (2021) contend, two questions could be crucial to raise concerning a successful EMI policy implementation: “*What level of English proficiency is needed to successfully teach EMI?*” And “*What kind of institutional support is provided for content teachers transitioning to EMI?*” (p. 230). As far as the evidence shows here, none of the above conditions seems to have been satisfactorily fulfilled. Lack of institutional support is obvious in the way these STEM content teachers were transitioned to the EMI reforms. It may be emphasized here that there is a need to understand that the drastic shift towards EMI is far from being a simple switch from one language to another. It is much too complex and complicated, as rightly pointed out by the expert we interviewed for this study. Alongside language skills, content English teachers require more knowledge and professional development in basic applied linguistics, and sufficient understanding of the overall pedagogical and instructional nuances of CBI through a foreign language such as English (Macaro, 2022).

## 7 | DISCUSSION

In general, these findings suggest similar kinds of challenges which EMI researchers report from many other contexts where English functions as a medium of instruction (Aizawa & McKinley, 2020; Doiz et al., 2012; Kamaşak et al., 2021; Macaro, 2022; Macaro et al., 2019; Sahan

et al., 2021). The most recurrent challenge is teachers' unpreparedness for the EMI policy, an issue that directly links to teachers' professional development and the policy around such development (Macaro, 2022). In the context of the present study, the findings are even more compelling because teachers' less professional investment in teaching content through English not only points to their linguistic struggles and language deficiencies, but is also entangled with their professional identities and self-efficacy. They barely identify themselves with the English language and are not confident about calling themselves content teachers using English. We know that their areas of specialization (e.g., physics, biology, mathematics) constitute their professional strengths and professional identity. For most STEM teachers, teaching subject content through English becomes a completely new avenue. This adds responsibility and workload because a sudden policy shift to the EMI policy implemented from the top holds them accountable for the dual role involved in teaching subject content through an unfamiliar language. Teachers are not fully prepared and less invested in holding the dual role and responsibilities assigned, and openly admit their lack of preparedness. Based on the evidence, we understand that learning and mastering a foreign language such as English is a life-long process, as they assert that a one-time training course or a short-term program cannot enable them to cope with the challenging demands of teaching their subjects through English without having a sound, solid, and long-term English-language and pedagogy base.

Based on the participant teachers' narratives and contextual realities, we understood that these teachers certainly require additional theoretical knowledge about language education, language teaching, and rudimentary applied linguistics to cope with the demands of an EMI policy in the sociolinguistic context of Kazakhstan, where EMI is a recent phenomenon. As the data unfolded, this aspect became significant because more and more we understood how such knowledge could broaden teachers' theoretical base, and help them negotiate strategically the complexities of language and content integration. It could also help them to realize students' linguistic needs, strengths, and weaknesses, and provide focused awareness of other fundamental socio-psychological aspects of learners such as individual learning styles and strategies, anxiety, motivation, and investment. EMI scholars such as Macaro (2022) emphasize that EMI teachers require what he calls "minimum required competencies in applied linguistics" (p. 542). These competencies might include "an understanding of how vocabulary is learnt and of the different varieties of vocabulary, how to improve the quality of interaction ... the relationship between teacher talk and supporting materials, and so on" (p. 542).

Based on the data and the teachers' concerns they revealed, one major contributory component to teachers' challenges, and overall struggles with the EMI policy implementation, appears to be the centralized and technocratic manner of policy formulation and its eventual implementation. The participants indicated a clear gap or disconnect between them and the policymakers. The policymakers appear to have overlooked or perhaps misunderstood the actual English-related needs of these teachers, and the linguistic environment within which they perform their duties. As the findings section highlighted, the courses and training these teachers received did not adequately prepare them to develop their whole repertoires as teachers who could perform their dual role of teaching subject content through English. By *whole repertoire* we refer to the range of skills and expertise these teachers must develop before they can meet the policymakers' expectations that they will deliver optimum level results within the EMI policy. This necessary expertise includes not only acquiring not only the four basic language skills in English, but also building a foundational theoretical and applied linguistics knowledge in and around second or foreign language teaching and learning, because the role and responsibility of these STEM teachers are significantly different from that of the specialist English teachers. Mere language proficiency

courses are not sufficient; the professional needs of these teachers are greater and more complex than normally assumed, as suggested clearly by Rahman (the EMI expert we interviewed). Research demonstrates the complexity of the issues involved, and how they challenge STEM content teachers who confront them in various contexts (Block & Moncada-Comas, 2022; Dickson & Litz, 2023; Jo et al., 2024; Lee & Stephens, 2020; Pun et al., 2024; Rahman & Singh, 2022; Richards & Pun, 2022; Roothoof, 2022; Ting, 2022). We suggest that they require some foundational courses and exposure to language teaching theory and practice, and courses that inform them about the trends in CBI, CLIL, applied linguistics, and English teaching in a bilingual-multilingual setting.

At the operational level, achieving the above would likely require closer working and strategic collaboration between different units such as education departments, pedagogical schools, and departments of applied linguistics or English language within the universities where relevant courses are offered. One important initial step would be to set up an inclusive and multilevel consultative body that can accurately conduct needs and environment analysis of the teachers' work, and then design plans for their professional development as well as their linguistic capacity building—needs-based and research-informed training, and courses in coordination with well-informed trainers. Such a consultative body should be constituted by applied linguists, sociolinguists, English language experts, researchers, and ELT practitioners. More specifically, several scholars studying EMI policies and practices understand that one crucial component of teacher professional development entails closer and meaningful collaboration between STEM content teachers and English language specialists (Costa & Coleman, 2013; Galloway & Ruegg, 2020; Macaro & Tian, 2023; Mancho Barés & Arnó Macià, 2017; Richards & Pun, 2021; Yazan, 2019). The disconnect that often exists between content teachers and English-subject teachers can potentially impact the outcomes of EMI policies and practices. As Lin (2016) observes, “Very often teachers and curriculum planners of content subjects and language subjects operate in insulated bubbles without talking to each other as if they do not need to know what is being taught and learnt in each other's subject domains, not to mention collaboration” (p. 63). At the policy and planning level, the disconnect also calls for a much greater engagement and collaboration among key stakeholders, particularly the local English teachers, STEM teachers, local teacher trainers, and school administrators (Baldauf & Liddicoat, 2008; Johnson, 2013; McCarty, 2011; Menken & Garcia, 2010). Moreover, considering these teachers' identity-related crisis and challenges, teacher education and professional development should make teacher identity an integral part and address teacher identity as an explicit focus, given that research in language and education emphasizes identity as the principal outcome of teacher education practices (Waller et al., 2017; Yazan, 2019).

## 8 | THE WAY FORWARD

Considering the challenges, we propose what we conceptualize as a *localized policy and planning paradigm* that is grounded in local linguistic and institutional realities and is responsive to the professional capacities and needs of teachers and students. As we note in our data analysis, the problems, challenges, and concerns of the STEM content English teachers can be traced back to top-down policy and planning, and in the resultant disconnect between macro- and micro-level actors. Also indicative are the misunderstood policies and misplaced priorities dumped down from the top, whereby the local actors working in the field are rendered voiceless and excluded (Manan et al., 2023, 2024; Tajik et al., 2023). Thus we advocate for a more localized, non-hierarchical, participatory, and locally engaged policymaking paradigm,

an approach that Johnson (2013) has described as a “non-traditional participation framework.” This suggests a non-technocratic and non-bureaucratic policy and planning approach in which “teachers and administrators engage in egalitarian decision-making and language policy action-research projects” (Johnson, 2013, p. 100). The local actors, especially teachers, find themselves more empowered and vocal in such a policy framework, which

...can alter traditional hierarchical decision-making structures and lead to the positioning of teachers as language policy arbiters, not just in policy implementation and classroom teaching, but in creation of bottom-up policy and interpretation and appropriation of top-down policy. (Johnson, 2013, p. 100)

Developing such a non-hierarchical, engaged, and non-traditional participation framework would help bridge awareness gaps between policymakers and local practitioners. Initiating such an engaged and coordinated policy exercise would allow policymakers to accurately assess the professional needs of teachers and align teacher training programs and courses with the above-stated disconnect. In terms of policy governance, a synergy between different administrative and pedagogical units can be crucial, especially involving universities and relevant researchers in designing needs-based courses and training tailored to address equally the linguistic, pedagogical, and theoretical needs and skills of STEM teachers. Thus, the overall professional training and development of the STEM content teachers using English calls for a distinct policy response that would understand the actual professional and pedagogical needs of these teachers and prepare them for their newly assigned professional roles.

Lastly, building and bolstering an all-round language and education knowledge is likely to make practitioners reshape and reconfigure their professional identities as English-content teachers as well as subject-content teachers. This calls for a rethinking of the approach towards teacher training not only in technical/professional terms, but also in attitudinal and strategic terms. It entails granting teachers more voice and more ownership in policymaking and its implementation. Finally, as far as local conditions allow, devolving policy and planning and reducing bureaucratic and technocratic barriers or obstacles would potentially render the policy more workable, implementable, and sustainable.

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## APPENDIX A

### SCHOOL TEACHERS' INTERVIEW GUIDE

The following questions are designed to gather information regarding English teachers' views about the English Medium Instruction (EMI henceforth) policy, the governments' approach towards the policymaking and implementation, professional training, the challenges involved, their assessment of the policy until now, and the recommendations/suggestions they make for the improvement of the policy and practices. More questions will be asked, and probing will be done based on teachers' responses during the interviews.

1. How do you view governments' EMI policy in schools? Please share your personal views.
2. Is the introduction of EMI a positive step? Please explain why would the government want to introduce EMI, and in what ways would EMI be beneficial to the students and to Kazakhstan?
3. What are your views about the way the government made the policy, and the way it implemented the policy in schools? I mean do you have any reservations or concerns about the policymaking and implementation about EMI policy?
4. Based on your experience, did the government take into confidence the teacher community before making and implementing this policy? And in your view, should teacher community be taken into confidence before making and implementing any such policy?
5. How important do you think is the role of teachers in the effective designing and implementation of any language-related policy? Will policy succeed or sustain if the teacher community is not allowed to participate in the decision-making?

6. How would you describe and roughly estimate your own level of proficiency in the English language?
7. How and where have you studied and learned English language? Please share with us a few words about your English learning journey.
8. How easy or difficult did you find this journey? Share with us the ups and downs of your English learning and teaching journey please.
9. Do you enjoy teaching English? Please share your own feelings.
10. Are there any challenges in teaching English effectively in the classrooms? If yes, please elaborate what kind of teacher-related challenges occur.
11. Were you given any professional training before implementing the EMI? If yes, explain the details of the training and the impact it left on your overall professional English teaching skills.
  - a. Where did the training take place?
  - b. Who provided the training?
  - c. How long did the training take?
  - d. What was the exact format of the training, and which skills were specifically addressed?
  - e. What was the outcome of the training? Did it help improve your English teaching skills? Are you satisfied with the kind of training and the expectations schools and society make of you?
12. Based on your English teaching experience until now, how do students cope with the EMI? Are there any challenges or issues you would like to highlight?
13. In your view, has the government invested sufficiently in the English language skills and overall professional development of the English teachers before or after the introduction of EMI policy?
14. How would you describe your overall experience of the EMI policy since its implementation? Is it a success or a failure?
15. In view of the overall performance and outcomes of the EMI policy until now, what would you recommend to the government regarding the policy? Are there areas which you think need more work and improvement? Please share your views.
16. Any other suggestions, recommendations, or concerns?

### **Language policy and EMI experts/specialists (local and international).**

The following questions are designed to gather information regarding experts/specialists' reflections about the English Medium Instruction (EMI) policy, the governments' approach towards the policymaking and implementation, professional training, the challenges involved, their assessment of the policy until now, and the recommendations/suggestions they make for the improvement of the policy and practices. More questions will be asked, and probing will be done based on participants' responses during the interviews.

1. How do you view the governments' EMI policy in schools? Please share your personal views.
2. In view of the sociolinguistic and sociocultural situation of Kazakhstan, do you consider the introduction of EMI a positive step? Please explain why would the government want to introduce EMI, and in what ways would EMI be beneficial to the students and to Kazakhstan?
3. One of the concerns raised about language policy making in Kazakhstan is the approach that the policymakers take, and it is believed to be centralized and top-down. It seems that there is a gap between the policy and its implementation—aspirations

- versus enactment. Based on your experience, did the government take into confidence the school principals and teacher community before making and implementing this policy? And in your view, should school principals and teacher community be taken into confidence before making and implementing any such policy?
4. Research evidence suggests that the language policy and planning have more chances to succeed and sustain when it is conducted in consultative manner involving all major stakeholders especially teachers in the policymaking process. Based on your knowledge and experiences, was the teacher community consulted and involved in the decision making about the EMI policy?
  5. How important do you think is the role of teachers in the effective designing and implementation of any language-related policy? Will policy succeed or be sustained if the school principals and teacher community is not allowed to participate in the decision-making?
  6. How would you describe your overall experience of the EMI since its implementation? Is it a success or a failure? Reflect on this please.
  7. In your view, are the available English teachers professionally trained well to deal effectively with the EMI policy?
  8. Do you think the government has invested sufficiently in the English language and pedagogical skills of the English teachers before or after the introduction of EMI policy?
  9. Based on your information, has there been any follow-up by the government/policymakers/concerned authorities about the progress made concerning EMI policy?
  10. Is there any kind of coordination between government/policymakers/concerned authorities and schools? If yes, please elaborate. If no, why, and how does it affect the policy?
  11. Are there any challenges in the effective implementation of the EMI? If yes, kindly elaborate on what those are, and how would the government deal with the challenges?
  12. What would you recommend to the government regarding the policy? Are there areas which you think need more work, review, or improvement? Please share your views.
  13. Several countries such as Kazakhstan where English is a foreign language, and is not used as a communicative resource in day-to-day lives, are struggling with the effective implementation of EMI as aspired. What could be the possible reasons? Please reflect on the issue and suggest how best could language policies in such countries may be made to work.
  14. Any other suggestions, recommendations, or concerns?

## AUTHOR BIOGRAPHIES

**Syed Abdul Manan** is an associate professor of multilingual education at the Graduate School of Education, Nazarbayev University, Astana, Kazakhstan. His research interests include language policy and planning, bilingual-multilingual education, English medium instruction (EMI), and World Englishes. He has published research in several prestigious journals. He has published research in several prestigious journals, including *Language Policy*, *Journal of Multilingual and Multicultural Development*, *Current Issues in Language Planning*, *Multilingua*, and *Language and Education*.

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