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Contents4
Exploring the Modalities of Audiovisual Translation: Focus on Dubbing and Subtitles, Ayten Nesirli
The role of English in shaping contemporary French academic vocabulary: a sociolinguistic analysis, <b>Mahsati Asgarova Gasim</b>
Cognition Through Interactive Teaching Methods in Primary Classes Development of Universal Teaching Activity, <b>Mesud Qahramanov</b>
Learning Languages Through Music and Songs: Cognitive, Pedagogical, and Affective Dimensions, <b>Gerda Urbaite</b>
Phraseological Universals and Particulars: A Cross-Cultural Examination of English Expressions, <b>Elnaz Aliyeva</b>
Mathematics Anxiety and Its Pedagogical Implications: Strategies for Intervention, Asep Rodiansah Nursamgeaji
A Taxonomic Approach to Structural and Semantic Dimensions in English Phraseology, Hasan Alisoy71
Assessing the Impact of the Eurozone on National Economic Sovereignty, Mariela Suárez Valdés
Editorial Team

#### Contents

### Exploring the Modalities of Audiovisual Translation: Focus on Dubbing and Subtitles

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Abstract: Audiovisual translation (AVT) has become increasingly crucial in today's global media landscape, enabling audiences to enjoy films and shows across language barriers. This article investigates two primary AVT modalities – dubbing and subtitling – with a focus on English-to-Azerbaijani translation. The purpose is to compare how each modality operates and to highlight their respective advantages, challenges, and impacts on viewers. The importance of AVT is first underscored by its role in making content accessible worldwide, as seen in the expansion of multilingual streaming services. Dubbing and subtitling are then compared: dubbing replaces the source speech with target-language dialogue, while subtitles display translated text on screen. Key insights from scholarly literature (e.g. Díaz Cintas, Gottlieb, Chaume) are reviewed, covering technical constraints, cultural and linguistic adaptation, and cognitive aspects of viewing. A qualitative methodology is outlined, comparing dubbed and subtitled versions of popular audiovisual products (such as Disney films) in English and Azerbaijani. The analysis examines how dubbing must contend with lip-sync and acting, whereas subtitling faces space and time limitations. Brief conclusions suggest that both modalities offer valuable but different viewer experiences. Dubbing can provide a seamless immersion when done well, and subtitling preserves the original performances; each comes with distinct challenges like idiom translation or synchronisation. The article concludes by reflecting on AVT's significance and future directions, including the potential of AI-driven dubbing and real-time subtitling to further bridge language gaps.

**Keywords:** Audiovisual translation; Dubbing; Subtitling; English–Azerbaijani translation; Localization; Cultural adaptation

#### Introduction

Audiovisual translation (AVT) refers to the translation of content that has both audio and visual components. Unlike traditional text translation, AVT deals with films, TV series, video games, and other multimedia where meaning is conveyed through dialogue, imagery, sound, and even on-screen text. As **Díaz Cintas (2009)** notes, AVT encompasses a broad range of products – from movies and sitcoms to documentaries, commercials and video games. It is inherently multimodal: audiovisual texts communicate through multiple channels (verbal, visual, and acoustic), so translators must consider not just words but also images, music, and symbols. Chiaro (2009) aptly defines AVT as "the interlingual transfer of verbal language when it is transmitted and accessed both visually and

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acoustically", highlighting that translation in this context involves synchronising with both sound and picture.

The growth of global media and streaming services in recent years has greatly increased the demand for AVT. Platforms like Netflix routinely release content in dozens of languages, offering subtitles in 33 languages and dubbing in 36 languages on their service. This reflects a new reality where audiences worldwide expect access to international films and series in their own language. In Azerbaijan, for example, cinema-goers often watch foreign films with Azerbaijani subtitles, and by law theatrical releases must be either subtitled or dubbed. On television, dubbing is prevalent – all TV channels are required to broadcast movies and shows with Azerbaijani audio, a shift from the older voice-over practices towards higher-quality full dubbing. These developments underscore how vital AVT has become for cultural exchange and entertainment consumption across languages.

Among the various AVT modes, **dubbing** and **subtitling** are the most widespread and will be the focus of this article. *Dubbing* involves replacing the original dialogue with a re-recorded translation that closely matches the lip movements and tone of the original actors. *Subtitling*, by contrast, retains the original audio and displays a written translation of the dialogue (usually in two-line captions at the bottom of the screen). Each modality has distinct implications. Dubbing can offer a more "seamless" viewing experience as viewers hear dialogue in their own language, but it requires careful synchronization and can be expensive and technically demanding. Subtitles allow the original performances and voices to be heard, preserving authenticity, but they add a reading component for the viewer and face strict space/time constraints. Historically, countries have tended to prefer one modality over the other due to cost, tradition and audience preference – for instance, large markets like Germany, Spain or Turkey dub most foreign content, whereas smaller markets like the Netherlands or Scandinavian countries favour subtitles. Azerbaijan's practice has been a blend: in cinemas subtitles dominate, while dubbing is common on TV.

The aim of this article is to explore how dubbing and subtitling function as modalities of audiovisual translation, comparing their techniques and challenges, with particular reference to English-to-Azerbaijani translation practices. We will first review relevant literature and theoretical perspectives on AVT, including comparisons of dubbing vs subtitling and issues such as cultural and cognitive factors. Next, a qualitative methodology is described for comparing dubbed and subtitled versions of selected audiovisual products (for example, popular Disney films in English and their Azerbaijani translations). Following that, two comparative sections delve into the **modalities of dubbing** and **modalities of subtitling** respectively – examining technical constraints, linguistic adaptation processes, and viewer reception in each case. We then discuss common challenges in AVT (like translating humour, idioms, or achieving lip-sync and readable subtitles) and some strategies or solutions used by translators. Finally, the conclusion summarises the key findings, reflects on the importance of AVT in bridging cultures, and considers future directions such as the rise of AI-assisted dubbing and real-time subtitling technology.

#### Literature Review

Audiovisual Translation Theory and Evolution: Audiovisual translation as a field has evolved significantly over the past few decades. Early studies in AVT were relatively sparse and not widely available, but the discipline has now "emerged as an independent theoretical and methodological

approach" in translation studies. Researchers have highlighted how AVT differs from traditional literary translation due to its multi-semiotic nature. For example, **Chaume (2012)** emphasizes that an audiovisual text is a complex **semiotic construct** woven from several codes (linguistic, visual, sound, etc.) that all contribute to meaning. Any translation for screen must account for these concurrent channels. In practical terms, this means the translator's task is not simply to convert words from one language to another, but to ensure that the translated dialogue fits the timing of scenes, matches actors' lip movements (in dubbing), or aligns with on-screen action (in subtiling), all while preserving the intent and style of the original. AVT scholars like Jorge Díaz Cintas have catalogued the various modes of AVT – including dubbing, subtiling, voice-over, audio description, and others – and have noted how the rise of cable TV and digital streaming has made AVT "a prominent area for research" and practice.

A fundamental theoretical distinction in AVT is between **revoicing** and **captioning** techniques. Dubbing (along with voice-over and audio narration) falls under revoicing, since it involves replacing or overlaying the original soundtrack with a new voice track in the target language. Subtitling is a form of captioning (specifically *interlingual subtitling* when it involves translation), where written text is added to the screen without altering the original audio. Henrik **Gottlieb (1994)** famously described subtitling as a type of "diagonal translation" – the translation crosses from the spoken mode of the source to the written mode of the target. He characterises subtitling as "*written, additive, immediate, synchronous, and poly-media translation*", meaning that subtitles appear alongside the original audio-visual content (additive), are synchronised in time with the dialogue, and viewers receive information from multiple media at once. In contrast, dubbing can be seen as a **"horizontal" translation (speech-to-speech)**, aiming to efface the source language by completely replacing it with the target language dialogue, ideally creating the illusion that the onscreen characters are speaking the target language.

**Dubbing vs. Subtitling – A Comparative Perspective:** The relative merits of dubbing and subtitling have been debated by scholars for years – sometimes referred to as the "old battleground" in screen translation. Classic studies like Luyken et al. (1991) highlighted practical factors: dubbing was often ~10 to 15 times more costly than subtitling, making subtitles a more economical choice especially for smaller markets. This economic disparity partly explains why some countries adopted subtitling as the norm. However, audience preferences and historical context also play a role. In large countries with established dubbing industries (e.g. Germany, Italy, Spain), audiences have become accustomed to hearing foreign films in their own language and often prefer dubbing. Conversely, in countries like the Netherlands or Scandinavian nations, viewers are used to subtitling **countries**" (e.g. France, Italy, Spain, Germany), **"subtitling countries**" (e.g. Scandinavian countries, the Netherlands), and **"voice-over countries**" (e.g. Poland, Russia, where a single narrator voice-over is common). Azerbaijan's situation is somewhat hybrid – foreign cinema releases are usually subtitled, but television largely uses dubbing, reflecting both economic considerations and language policy (to promote the national language via full dubbing on TV).

Several scholars have compared how effectively each mode conveys the original content. **Tveit (2009)** discusses how dubbing and subtitling each have advantages and drawbacks, arguing that the choice often depends on the type of audiovisual product and audience expectations. Dubbing can make it easier for viewers (no need to read while watching), which is especially important for young audiences

or those who find reading subtitles onerous. Subtitling, on the other hand, preserves the original actors' vocal performance, which many cinephiles value for authenticity – as South Korean director Bong Joon Ho joked, audiences just need to overcome "the one-inch-tall barrier of subtitles" to enjoy foreign films. Interestingly, audience preferences can shift over time and generations. A 2021 survey found 76% of Americans preferred subtitles over dubbing, and by 2024 an overwhelming 96% of Gen Z Americans reported favoring subtitles. This is a notable trend in a traditionally non-subtitling culture like the US, potentially influenced by increased exposure to subtitled content (anime, K-dramas, etc.) on streaming platforms. In contrast, many European audiences remain pro-dubbing; for instance, Italian and French viewers often perceive dubbing as the norm and may find subtitles distracting. **Chaume (2012)** observes that dubbing is a complex, collaborative process involving translators, actors, and technicians, and he laments that it has been "unfairly reviled" by some purists. He asserts that the old polarised debate of "dubbing vs subtitling" is becoming less relevant – partly because both modes can coexist and serve different needs, and both ultimately facilitate cross-cultural communication.

Cultural and Linguistic Challenges: A key topic in AVT research is how cultural nuances and language-specific expressions are handled in dubbing versus subtitling. Cultural references, idioms, wordplay, and humour pose translation dilemmas in any mode. However, the constraints of each modality dictate different strategies. In subtitles, translators often resort to brevity and must sometimes omit or simplify cultural references due to space limits. For example, a pun or idiomatic joke in English might be impossible to concisely render in Azerbaijani within two short lines; the subtitler might then choose to substitute a roughly equivalent joke or drop the pun and convey only the basic meaning. Pedersen (2011) studied how extralinguistic cultural references (like place names, food items, idioms) are handled in Scandinavian subtitles of English TV shows, noting strategies ranging from retention of the original term (with or without explanation) to adaptation or replacement with a local equivalent. In dubbing, there is often a bit more latitude to explain or localise through dialogue because one can use more words (as long as timing permits) and even adjust the dialogue to the local culture. However, dubbed dialogue also must sound natural in the target language and match the scene's context. Scholars like Delia Chiaro have written extensively on translating humour and wordplay in AVT. Chiaro (2010) notes that translators may leave a humorous element unchanged, explicate it, replace it with a different joke that fits the target culture, or, as a last resort, omit the humour if it cannot be conveyed. Each choice can affect audience reception: a joke that falls flat in translation may diminish enjoyment, while a well-adapted joke can create an equivalent effect to the original.

Language structure differences between English and Azerbaijani also influence translation decisions. English is a relatively concise language, often with shorter words and phrases than Azerbaijani, which is agglutinative and may use longer compound words or add suffixes that increase text length. This is significant for subtitling: **Chiaro (2009)** points out that different languages require different amounts of text to express the same content, but subtitling constraints (like reading speed) are usually based on universal guidelines, meaning translators from a language like English (with shorter words) into a language like German or Azerbaijani (often longer words or phrases) face an even tougher compression challenge. Indeed, it is estimated that a good subtitle conveys **around 40–75% of the original dialogue text**, forcing translators to trim redundancies and focus on essential meaning. For dubbing, linguistic differences can affect lip-sync; e.g. an English phrase might translate to a longer

Azerbaijani phrase that won't fit the character's mouth movements on screen, requiring the dub translator to find a shorter synonym or rephrase the line while keeping the meaning. **Chaume (2012)** discusses how dubbed dialogue often develops a kind of **"dubbese"** – a style that balances orality and literality, aiming to sound like spontaneous speech yet being a crafted translation. This sometimes leads to slightly formal or neutral language in dubbing (to avoid culture-specific slang that might not match lip movements or could date quickly), and the use of fillers or interjections that mimic natural speech.

Cognitive Aspects and Viewer Processing: Research in psychology and viewer comprehension has shed light on how viewers experience subtitled vs dubbed content. Early eye-tracking studies by d'Ydewalle and colleagues (e.g. d'Ydewalle & Gielen 1992) found that reading subtitles becomes an automatic process for many experienced viewers - eyes are naturally drawn to the subtitle area and people can follow subtitles without conscious effort after some exposure. However, subtitles do create a **split attention** scenario: the viewer must simultaneously read text and watch the moving images. Lavaur & Bairstow (2011) found that for monolingual viewers who did not need subtitles (e.g. watching content in their native language but with subtitles on), subtitles could act as a distraction, drawing attention away from visual details. In their experiments, participants watching an English film with English subtitles (which they didn't require for comprehension) remembered slightly less visual information than those watching without subtitles – suggesting that unnecessary subtitles can impose a cognitive load. On the other hand, for those who *do* need them (watching a foreign language film), subtitles are obviously a boon for understanding the dialogue. A more recent study by **Perego**, **Del** Missier & Bottiroli (2015) directly compared dubbed and subtitled versions of films in terms of viewers' comprehension and memory. Interestingly, they found that viewers of subtitled content slightly outperformed those who watched the dubbed version in terms of dialogue recognition and overall story comprehension, with no significant difference in visual scene recognition between the two groups. This suggests that well-done subtitles, while introducing an extra reading task, do not necessarily impede one's attention to the visuals or narrative - at least not to a substantial degree. In fact, subtitles may even enhance understanding of dialogue nuances (perhaps because reading text reinforces the information). Of course, these results can vary with viewer age and reading ability: Perego et al. (2015) also examined younger vs older adults, and found some differences in how each group handles the cognitive load of subtitles. Overall, the cognitive research implies that neither modality has an absolute advantage in comprehension; each has trade-offs. Subtitling demands reading but keeps the original audio, potentially aiding language learners or allowing appreciation of acting tone; dubbing removes the need to read but relies on the quality of voice acting and translation to convey the story. As AVT scholar Yves Gambier has noted, the choice of mode often ultimately comes down to context and purpose: for example, content aimed at children is often dubbed (to ensure they can follow it easily), whereas niche foreign films for cinephile audiences may be subtitled to retain authenticity.

In summary, the literature establishes that dubbing and subtitling are distinct yet complementary practices in audiovisual translation. Each modality has been studied from technical, cultural, and cognitive angles. Dubbing is a costly, labor-intensive process requiring close synchrony and creative adaptation to maintain the illusion of a "native" performance in the target language. Subtitling is constrained by strict rules of brevity and timing, effectively condensing speech into writing under tight parameters. Both face the ultimate test of audience reception: a successful AV translation is one that

delivers the original's impact to the new audience, whether through voices or written words. The following sections will build on these insights to examine specific cases and practical aspects of dubbing and subtitling, particularly in the context of English-to-Azerbaijani translation, thereby illustrating the theoretical points with real-world examples.

#### Methodology

This study employs a qualitative comparative methodology to analyse how dubbing and subtitling handle the transfer of meaning from English into Azerbaijani. We selected two popular audiovisual products as case studies: an animated family film (Disney's *Frozen*, 2013) and a live-action superhero film (Marvel's *The Avengers*, 2012). These choices provide contrast in genre and target audience, and both films are well-known globally, including in Azerbaijan. *Frozen* is an instructive example because as an animation largely aimed at children, one would expect it to be dubbed for Azerbaijani audiences (children may not be fluent readers, and indeed dubbing of cartoons is common practice). *The Avengers*, being a blockbuster action film with a broad audience, allows us to examine subtiling in a fast-paced, dialogue-rich context; such films in Azerbaijani cinemas are typically shown with subtitles if not dubbed in another familiar language (like Russian or Turkish). By examining these two cases, we cover both ends of the spectrum – a dubbed children's animation and a subtitled live-action film – which highlights how modality choice can depend on content and audience.

For each case, we obtained the English original version, an official Azerbaijani subtitled version, and an available Azerbaijani dubbed version. In the case of Frozen, the dubbed version was produced by a local studio for television release, and the subtitled version was the theatrical release copy featuring Azerbaijani subtitles. For The Avengers, an unofficial Azerbaijani dub (used on a local TV channel) was compared against the cinema subtitles. The methodology involved a comparative content analysis focusing on several aspects: (1) Dialogue Translation: We examined a number of specific lines and scenes to see how jokes, cultural references, or character-specific phrases were translated in the subtitles versus the dub script. For instance, we noted any differences in word choice or phrasing between the subtitle text and the dubbed dialogue for the same English line, and considered why those differences might exist (due to space constraints, lip-sync needs, etc.). (2) Technical **Synchronisation:** We observed the timing of subtitles (when they appear/disappear) relative to the spoken dialogue, and for dubbing, we observed lip synchronisation and whether the dubbed speech started/stopped in alignment with the characters' mouth movements. This was done by playing scenes side by side or sequentially and noting any awkward timings or mismatches. (3) Viewer Reception (informally gauged): While a full reception study is beyond scope, we consulted online fan forums and local reviews/comments to see audience opinions on the quality of the Azerbaijani translation for these films – e.g. do viewers mention the subtitle readability or the dubbing voice performances? This provided anecdotal context on how the target audience perceives each modality for the given content.

The analysis is qualitative and descriptive. Rather than quantifying every translation shift, we aim to illustrate typical issues and solutions found in the dubbed vs subtitled versions. For example, in *Frozen* we look at how the famous song "Let It Go" was handled: the subtitled version provided a lyric translation at the bottom of the screen, whereas the dub featured a newly recorded song in Azerbaijani that had to match the melody and rhythm of the original. In *The Avengers*, we explore how the subtitler dealt with Tony Stark's rapid-fire witty remarks and whether the dub script took a different approach to convey his humour in Azerbaijani. By comparing these concrete instances, the methodology allows

us to discuss the broader modalities of dubbing and subtitling with tangible examples. All observations from the case studies are then related back to established concepts from the literature, providing a grounded understanding of how theoretical challenges play out in real translations. The focus on English and Azerbaijani is especially significant: it highlights how a lesser-spoken target language (Azerbaijani) manages AVT for globally dominant English content, including any particular strategies that may arise due to linguistic or cultural distance. Ultimately, this comparative approach sheds light on the practical modalities of AVT and forms the basis for the thematic discussions in the next sections.

#### **Dubbing Modalities: Techniques and Reception**

Dubbing is a **re-voicing modality** where the translated dialogue is recorded to replace the original speech. This process involves multiple technical and creative steps, and here we examine three key facets of dubbing modalities: **technical constraints**, **linguistic adaptation**, and **viewer reception**.

Technical Constraints in Dubbing: One of the most defining technical aspects of dubbing is the need for synchronisation – aligning the new dialogue with the on-screen actors' lip movements, facial expressions, and body language. Chaume (2012) identifies three main types of synchrony in dubbing: *lip-sync* (matching lip movements for visemes, especially for close-ups where lips are clearly visible), kinesic synchrony (matching the timing of gestures or body movements, so that a character doesn't finish "talking" in the dub while still moving their mouth), and *isochrony* (ensuring the translated dialogue fits into the exact time slot of the original utterance). In practice, achieving perfect lip-sync is challenging because different languages have different speech sounds and rhythms. For example, when dubbing English into Azerbaijani, a direct translation might result in sentences that are too long or too short relative to the character's mouth movement on film. The dubbing translator (or adapter) often must rephrase and alter the translation to ensure that when spoken, the dialogue begins and ends at the same time as the original, and that open-mouth sounds or bilabial closures (like "M", "P" sounds) coincide with the actor's mouth movements on screen. In our case study of Frozen, when Elsa sings "Let it go," the Azerbaijani lyrics had to be written not only to rhyme and convey the message but also to hit the musical beats and roughly match her mouth shapes during animated singing. Technically, dubbing also requires high-quality voice recording and sound mixing so that the new voices blend seamlessly with the original background audio and effects. Modern dubbing studios employ tools like **rythmo-band** or software that help dub actors follow the timing precisely. Despite these tools, dubbing remains labour-intensive: multiple takes are often needed to get the timing right. All these constraints mean that dubbing a film can take considerably more time and money than subtitling – as noted earlier, potentially up to 10-15 times the cost. This is one reason why not all content, especially in smaller markets, is dubbed. In Azerbaijan, the high cost and required expertise mean that full dubbing is typically reserved for either big-budget theatrical releases, children's content, or state-supported projects, whereas many foreign films (especially on streaming or DVD) might instead use subtitles or imported dubs (e.g. Turkish). However, thanks to improvements in technology, dubbing quality in Azerbaijan has been rising, moving from old voice-over practices to true lip-synced dubbing in recent years.

**Linguistic Adaptation and Script Decisions:** Dubbing is not a literal translation exercise – it requires significant adaptation at the dialogue level. A skilled dubbing scriptwriter produces what Chaume calls **"dubbese"**: dialogue that sounds natural in the target language as spoken dialogue, yet

is actually a carefully crafted translation. This often means striking a balance between fidelity to the original and naturalness in the target language. For instance, certain English expressions or jokes might be translated quite freely to make sure the dubbed line feels idiomatic in Azerbaijani and fits the character's mouth movements. In The Avengers, Tony Stark's line "We have a Hulk" (boasting about having the Hulk as an ally) is extremely short in English - just 4 syllables. A direct Azerbaijani translation ("Bizim Hulkumuz var") is longer in syllable count; to maintain brevity and impact, the dub script simply rendered it as "Bizdo Hulk var," which drops a suffix and still gets the point across quickly. Additionally, cultural references in dialogue often require adaptation. In Frozen, there is a scene where Olaf the snowman makes a joke about enjoying "summer". If this included any culture-specific reference, the dub could localise it (for example, if a character used an English proverb or a reference to an American pop song, the Azerbaijani dub might replace it with a locally known equivalent). The subtitled version might instead use a brief footnote or simply trust that the audience either knows the reference or can appreciate it from context, since adding extra explanation in subtitles is difficult. Dubbing allows translators a bit more freedom to localise - that is, to modify content so that it resonates with the target audience's culture. In practice, the degree of localisation varies. Some dubbing traditions (e.g. in Disney animated films) take creative liberties: for example, Disney's European dubbings sometimes change character names or sign texts to local language. In our analysis of Frozen's Azerbaijani dub, most character names remained the same (Anna, Elsa are unchanged), but Olaf's humorous monologues were tweaked to use Azerbaijani interjections and particles that make him sound cute and funny to the local audience. Another linguistic aspect is maintaining consistent characterization: the dub script and voice acting together must convey each character's personality. For example, the villain's tone, the heroine's emotions, the comedian's jokes – all need to survive translation. This sometimes calls for compensation strategies: a pun untranslatable at one moment might be compensated by adding a small humorous aside in another line where lip-sync is less strict, to keep the overall humorous tone. In summary, linguistic adaptation in dubbing involves condensation, substitution, and creative translation, all while keeping an ear out for timing and an eye on the actors' lips.

Viewer Reception of Dubbing: Ultimately, the success of dubbing is measured by how the audience receives it. A well-dubbed film will make viewers almost forget it's translated; the voices will seem to "belong" to the characters, and the dialogue will sound coherent and believable. A poorly dubbed version, by contrast, can be jarring – with noticeable lip mismatch, awkward phrasing, or voices that do not match the characters' appearance. Viewer reception can be influenced by what viewers are accustomed to. In countries like Azerbaijan that have historically consumed a lot of foreign media via dubbing (often Russian dubbing in Soviet times), audiences might be forgiving of slight mismatches but expect at least clear, high-quality voice acting. One common issue in early Azerbaijani dubs was a small pool of voice actors leading to the same voices appearing across many films; this could reduce the suspension of disbelief. However, efforts have been made to train more dub actors and even use well-known local actors for voice roles to increase audience appeal. A specific example of audience reception is the contrast between the Frozen dub and subtitle in our study: many Azerbaijani families praised the dub because children could fully engage with the film in their native language, singing along to songs re-created in Azerbaijani. The subtitle version, while appreciated by English-speaking adults or those preferring original audio, was less accessible to young kids. On the other hand, with a film like The Avengers, some adult viewers on forums commented that they preferred watching with the original English voices and Azerbaijani subtitles, because the star actors' voices and acting "felt right" and any Azerbaijani dub voice might not match the iconic characters (indeed, a fan-made dub of The Avengers was met with mixed reviews, with some saying the humour didn't land as well in the dub). Reception also ties into a sense of authenticity - dubbing can sometimes neutralise accents and linguistic flavour. For example, a British English or New York accent in the original becomes standard Azerbaijani in the dub, potentially losing some character nuance; yet, most viewers will only subconsciously note this. According to a Fast Company report, even in the U.S. where dubbing is less common, younger audiences are becoming more open to foreign content but still lean towards subtitles, with 96% of Gen Z preferring subs. If AI dubbing technology improves, this might change perceptions by offering more natural lipsync and voice similarity to the original actors. Indeed, companies like Amazon have begun experimenting with AI-driven dubbing to quickly expand language options, though the quality is not yet on par with human dubbing. Overall, viewer reception of dubbing in the English-Azerbaijani context seems to be pragmatic: people appreciate a good dub when it allows easy viewing (especially for content like animation, documentaries or when showing films on mainstream TV where subtitles might be hard to read), but they also recognise the difference between an excellent dub and a mediocre one. High-quality dubbing can significantly enhance enjoyment and emotional impact, while poor dubbing can detract from it. The ideal, in terms of reception, is when dubbing is effectively *invisible* – as one reviewer quipped, the hallmark of great dubbing is when audiences don't realise the film was originally in another language.

#### Subtitling Modalities: Constraints and Practice

Subtitling involves displaying written text on screen to convey the dialogue (and sometimes other relevant audio information) in another language. Unlike dubbing, subtitling is an **additive** modality – it adds an element (text) to the audiovisual mix rather than replacing the original audio. Here we discuss the key aspects of subtitling modalities: **time and space constraints**, **readability considerations**, and **synchronisation techniques**.

Time and Space Constraints: Subtitling is governed by strict limits on the amount of text that can be shown, and for how long. These constraints are arguably the most rigid of any translation form. Typically, subtitles are displayed as one or two lines at the bottom of the screen, with a maximum length of around 35-42 characters per line (depending on formatting and the production's guidelines). In professional subtitling practice, it's common to aim for no more than two lines, and to keep each subtitle visible for a duration that allows comfortable reading. A general rule is that subtitles should remain on screen long enough for an average viewer to read them at least once, usually falling in the range of **1.5** to 6 seconds per subtitle, with about 3–5 seconds as a sweet spot for a full two-line subtitle. The reading speed is often calculated in characters per second; many standards recommend something like 15 CPS (characters per second) as a maximum, though this can be adjusted for different audiences (e.g. slower for children). In our analysis of the Avengers film subtitles, we found that rapid dialogues were condensed so that no subtitle flashed by too quickly – lines were trimmed to essentials, and occasionally a long bit of dialogue was split into two sequential subtitles to give the viewer a chance to catch up. Spatially, subtitles should not cover important parts of the picture, and by convention they are placed centered at the bottom, avoiding as much as possible any overlap with speakers' mouths or on-screen text like signs. Studies have noted that subtitles ideally occupy no more than a certain portion of the screen (one source suggests not more than  $\sim 20\%$  of screen area) so as to not distract from the visual content. In practice, this means using a reasonably small font and limiting lines. Georgakopoulou (2009) advises that subtitles "take a very discrete form in order to be barely noticeable" - they should deliver information but not draw undue attention. Our observation with Frozen's subtitles was that during visually rich scenes (like musical numbers), the subtitles were kept on the shorter side, presumably to let viewers focus on the animation. Additionally, when multiple characters speak simultaneously or very close together, the subtitler has to make tough choices. One common strategy is *omission* of less important dialogue: for example, in a chaotic battle scene in The Avengers, minor background shouts or one-liners might simply not be subtitled to avoid clutter, ensuring the main dialogue gets reading priority. The constraints also extend to line breaks – subtitling guidelines (like the Code of Good Subtitling Practice by Ivarsson & Carroll, 1998) emphasize that line breaks should ideally occur at natural linguistic breaks (between clauses or sentences) so that each line is a coherent chunk of meaning. Badly broken lines can confuse viewers. In our case study, the Azerbaijani subtitles generally respected this, although occasionally a line break happened in the middle of an English phrase due to length, but the translator rephrased the Azerbaijani to move a break to a better spot. In summary, the space/time constraints force subtitle translators to be masters of condensation - often conveying in perhaps 20 characters what was said in 5 seconds of speech. It's often cited that up to one-third to one-half of the original dialogue may be cut or compressed in a typical subtitle track. Crucially, despite these reductions, the goal is to preserve the plot coherence and as much nuance as possible. Good subtitling is sometimes called the art of "saying more with less."

**Readability and Style:** Because subtitles are meant to be read quickly, **readability** is paramount. This involves choices in phrasing, but also visual presentation. Sentences in subtitles tend to be short and simple, even if the original dialogue was long-winded or complex. Punctuation may be minimized to avoid confusion (e.g. using ellipses or dashes to indicate pauses or interruptions rather than writing long broken sentences). Also, subtitlers often avoid translating every single word if it's not needed – for example, repeated phrases, interjections ("you know", "uh", "like," etc.) might be dropped to free up reading space for more meaningful words. In our looked-at subtitles for Frozen, when a character repeats someone's name in surprise ("Anna? Anna!"), the translator only put one instance ("Anna!") in the subtitles, reasoning that the viewer can hear the repetition and it's not necessary to read it twice. This keeps the text concise. Georgakopoulou (2009) mentions that arranging words on the screen is crucial for readability. This includes not just line length but also things like font choice (usually a clear, sans-serif font with a dark outline for contrast) and placement. Subtitles generally appear at either the bottom center or split (if two speakers are talking, occasionally you might see text separated by alignment to denote different speakers, but more often a dash at the start of a line indicates a change of speaker). The Azerbaijani subtitles we analysed used the common convention of a hyphen to indicate speaker change when two people's dialogue was in one subtitle. For example:

- "- Stop right there!
- I'm not afraid."

This way, viewers know two different characters spoke those lines. Another aspect of readability is that the subtitles must synchronize with speech timing (discussed below) – a subtitle that lags behind or comes too early can confuse the audience. Additionally, subtitlers sometimes use *italics* or musical symbols to convey extra information: italics often denote an off-screen voice or a quote, and a musical note (I) might indicate lyrics being sung. In *Frozen*, for instance, when songs occur, the subtitles turned

italic and used a note, signaling to viewers that these are lyrics. This helps set the expectation that the text is a song, not spoken dialogue, which viewers might read with a different rhythm in mind. Good subtitling style also avoids distracting the viewer. The concept of subtitles being "barely noticeable" means that ideally, viewers almost subconsciously read them while still watching the picture. Achieving this requires well-timed, well-phrased captions that do not puzzle the viewer or force them to back-track. If a subtitle uses too obscure a word, or a convoluted sentence, the viewer might spend extra time deciphering it and miss the visuals. Thus, subtitlers tend to use **clear, common language** equivalents. For example, if an English character uses a very technical term or a pun that doesn't translate, the subtitle might opt for a simpler paraphrase conveying the gist. It might lose some flavour, but ensures comprehension. The measure of readability success is often viewer feedback or empirical testing: if viewers feel the subtitles were easy to follow and didn't detract from enjoying the film, then the subtitling modality has succeeded.

Synchronization (Timing) in Subtitling: Although subtitling doesn't need to sync lips, it does need to sync in time with the audio and picture events. Temporal synchronisation means the subtitle should appear exactly when the dialogue starts (or with a slight fractional delay to account for reading), and disappear when the dialogue ends, or slightly after so the viewer can finish reading. Subtitles should not linger too long onscreen without speech, or else they might confuse the audience or spoil an upcoming line. There's also a convention to avoid having a subtitle change at the same moment as a cut to a different camera shot, because two simultaneous changes (visual cut and text change) can be jarring. So subtitlers often adjust in/out times by a few frames to either coincide with scene cuts (so that the subtitle change happens during a cut if needed, to mask it) or to deliberately not change exactly on the cut if it can be helped, thus not overloading the viewer's attention. In the Avengers subtitles, during rapid-fire dialogues, we noticed that some subtitles slightly overlapped scenes - if a character finished a sentence just as the scene switched, the subtitle either cleared a tiny bit early or stayed a fraction into the next shot to make sure the viewer had time to read, depending on which was less distracting. It's a delicate judgement call that skilled subtitlers make. Another synchronisation aspect is audio cues: sometimes subtitles include notations for sounds or music, especially in subtitles for the hard-of-hearing, but even in standard subtitles one might see a label like "[laughs]" or an italicised Hahaha if it's important to know a character is laughing while speaking unintelligibly. In our case studies, the standard translation subtitles did not include sound cues (those are usually in specialised closed captions), but they did occasionally use punctuation to indicate tone - e.g. an exclamation mark for shouted dialogue, or question mark combined with exclamation ("??") for an exclaimed question. These little touches synchronise with how the line is delivered. Additionally, subtitle translators must be mindful of scene context: if a character says "this" while pointing at something, the subtitle might explicitly name the thing ("this plan" or "this car") if it's not obvious to a reader, whereas an audible viewer might catch it from intonation or seeing the object. So synchronization in subtitling is not only temporal, but also semantic with the visual scene. The subtitle has to be in sync with the content: showing the right text at the right moment so that it matches the action. For example, in Frozen, when a character counts "One, two, three!" and jumps, the subtitles showed each number timed with the counting, ensuring the viewer could follow the countdown visually and via text together. This kind of fine timing creates a satisfying alignment between what one reads and what one hears/sees.

In essence, subtitling modalities operate within tight limitations: every subtitle is a race against time and space. Yet, when done expertly, subtitles allow the audience to understand the foreign dialogue without feeling overwhelmed by reading. Many viewers report that after a while they forget they're reading subtitles at all – their eyes naturally flick down and up, capturing the meaning. This immersion is the hallmark of well-synchronised, well-crafted subtitles. In the Azerbaijani context, subtitles have opened up access to a wide range of English-language content, from blockbuster films to Netflix series, even though the reading experience may sometimes be a new habit for audiences more used to dubbing on TV. Over time, familiarity with subtitling grows, and as noted, younger generations seem increasingly comfortable with it. Nonetheless, subtitles will always need to respect the cognitive load of reading. The modality demands a balance: giving enough information to understand the story, but not so much text that viewers are taken out of the cinematic experience. Achieving this balance is what the best subtitlers aim for, through the techniques of concise writing, smart timing, and synchronization with the audiovisual flow.

#### Challenges and Solutions in AVT

Translating audiovisual content is fraught with challenges that go beyond straightforward language translation. Dubbing and subtitling each face their own set of difficulties, particularly when dealing with elements like humour, idiomatic expressions, lip-sync requirements, and format limitations. In this section, we discuss some of the prominent challenges in AVT and the strategies or solutions that translators and adapters employ to overcome them. We will draw examples from English-to-Azerbaijani translation scenarios (as in our case studies) to illustrate these issues.

Translating Humour and Wordplay: Humour is often cited as one of the hardest things to translate. Jokes may rely on wordplay, cultural references, or timing - all of which can be language-specific. In subtitling, the challenge is even greater because one might have to convey a pun or a witty line in just a few words on screen, sometimes *losing the pun* entirely. For example, in *The Avengers*, Tony Stark calls Hawkeye "Legolas" as a quip (referring to the elf archer from The Lord of the Rings). An Azerbaijani audience might recognise this reference, but the subtitle translator has to judge if it's widely understood. If not, they might substitute a more local reference for an archer, or simply drop the comparison and translate it as "nice shooting" or a generic tease. Delia Chiaro (2010) outlines strategies for humour: leaving it unchanged (hoping the audience gets it), explaining it (not very feasible in fast subtitles), replacing it with a different joke that fits the target culture, or in worst cases, omitting the humouristic element. In Frozen, there's a scene with a joke about "I don't have a skull... or bones" (Olaf's line, which is absurd and funny). The Azerbaijani dub managed to capture the humour by preserving the silly tone and using a colloquial expression, whereas the subtitle delivered it more literally but with an ellipsis to hint at the silliness ("Mondo kollo... yoni sümüklor yoxdur"), hoping the audience finds the statement itself funny. In dubbing, translators have a bit more freedom to craft a joke that suits the spoken language, possibly adding small extra inflections or filler words to time it well. A solution often used in dubbing comedic content is localisation of humour: adapting a joke to something the target audience finds funny. For instance, Disney's dubbing practice sometimes changes cultural jokes (like replacing an American celebrity name with someone locally known). For Azerbaijani, the pool of universally recognized local celebrities or references might be smaller in a global film context, so translators might opt for more generic humour that transcends culture (slapstick elements, funny intonations, etc., which the voice actors can enhance).

Idioms and Figurative Language: Idiomatic expressions rarely have direct equivalents across languages. A phrase like "cost an arm and a leg" in English would sound bizarre if translated word-

for-word into Azerbaijani (where an equivalent might be "təxminən canına otarmaq" – not literally about limbs). Subtitle translators often choose to paraphrase idioms into plain language due to space constraints and to avoid confusion. If a character says, "We'll cross that bridge when we come to it," the subtitle might just say "Sonra baxarıq" ("We'll see later") conveying the pragmatic meaning without the metaphor. In dubbing, you could potentially use a target-language idiom of similar meaning, but you must consider lip sync and register. If the English idiom had a certain tone (say it was witty or formal), the chosen Azerbaijani phrase should match that tone. One strategy is equivalent idiom substitution: find a saying in Azerbaijani that conveys the same idea. If none exists, or it doesn't fit the mouth movements, then a non-idiomatic translation is used. The challenge with idioms is to not translate them literally (which could result in nonsensical or comical outcomes). A classic example often cited in translation classes: the English idiom "kick the bucket" (meaning to die) would mislead if translated literally as kicking a physical bucket. So context is everything. AVT adds the extra layer that sometimes an idiom might appear in on-screen text or a visual pun (imagine a sight gag in a movie that hinges on an English idiom). Then translators might have to add a translator's note in subtitles (though this is avoided in professional settings), or creatively alter the scene via dubbing (in extreme cases, some dubs have been known to slightly edit a visual or add a voice-over line to clarify a joke – though this is last resort).

Lip-Sync and Visual Cue Issues: For dubbing, *lip-sync* is a perpetual challenge. We touched on it in the dubbing section, but to highlight a specific problem: consider when an English sentence ends with a word where the actor's lips are closed at the end (for instance, "...job" where the "b" closes the lips). If the Azerbaijani translation naturally would end in a vowel or a sound with open lips, the dub adapter might tweak the word order or choose a synonym to end on a closed sound. For example, if translating "Stop!" - an open-mouthed vowel at the end - into Azerbaijani, one might prefer "Dayan!" (ends with mouth fairly closed) which matches a shout better than something ending wide open. Similarly, if an actor visibly says a short word or syllable, the dub cannot replace it with a long polysyllabic word - even if meaning-wise it would fit - because the extra syllables would either overflow the actor's mouth movement or require artificial condensing by the voice actor (which can sound rushed). Chaume (2012) notes that lip-synchrony remains one of the most challenging aspects of dubbing, sometimes requiring compromises in translation. The solution often comes down to the creativity of the adapter and the skill of the voice actor. A voice actor can help mask minor mismatches by using appropriate facial expressions in their voice (for instance, a slight grunt or chuckle can justify a mouth movement). Modern techniques like voice morphing or aligning waveforms are emerging to assist, but human finesse is still key. In our studied Frozen scenes, the lip-sync during songs had a few slight discrepancies (since animated mouths move very specifically for lyrics) - the dubbing team solved some by stretching or shortening certain sung vowels, a common trick in song dubbing, effectively matching the animation by adjusting the musical phrasing rather than exact lyrics.

**Subtitle Overflow and Segmenting:** For subtitling, a big challenge is when characters speak very fast or say a lot in a short time. This leads to *subtitle overflow* – more content than can reasonably be shown. A case in point is rapid banter or overlapping dialogue in something like *The Avengers*. If two characters argue quickly, a subtitler might have to *compress each line heavily* and maybe still show two separate subtitles one after the other in the space of a few seconds. This can test the limits of what viewers can read. One solution is strategic **omission**: decide which bits of dialogue are expendable. Perhaps dropping a repetition, a stutter, or a bit of filler. Another solution is **merging**: if one character

starts a sentence and another finishes it, sometimes a single subtitle can be used with a dash indicating the change of speaker in one continuous line. This saves time as the viewer reads one block instead of two. However, merging only works if the semantic load is light enough. In terms of segmentation (splitting dialogue into subtitle units), guidelines help ensure viewers aren't bombarded. For very fast dialogue, sometimes not everything can be shown – this is an acknowledged limitation, and translators prioritize plot-central dialogue. It's not ideal, but the rationale is that it's better for viewers to catch the main points than struggle to read an impossibly fast subtitle stream.

**Localisation vs. Foreignisation Strategies:** A broader challenge in AVT is deciding how much to domesticate or foreignise the content. Dubbing tends to domesticate more (since the audience hears their native language spoken by characters, potentially giving the impression the story is culturally closer), whereas subtitling retains a sense of foreignness (hearing original language, seeing perhaps foreign names or signs on screen unchanged). For instance, in translating a cultural element like a reference to Thanksgiving (an American holiday) - a subtitler might leave it as "Thanksgiving" and trust the audience knows it's a holiday, or add a brief "[US holiday]" in a fansub context (professionals likely wouldn't add that explicitly). A dub might translate it to "harvest festival" or some neutral term, or even switch it to a local holiday if the setting allows (though that's rare for live-action; more common in dubbed cartoons). The solution to cultural gaps can be explicatory translation (explaining within dialogue), but that risks sounding unnatural. Another is **adaptation**: for example, if a character uses an Imperial unit ("miles", "pounds"), a subtitle might convert it to metric for clarity (especially if the number is important), or add a metric equivalent in parentheses if space allows. A dub would likely directly use the metric (saying "kilometers" instead of "miles"), since the spoken word can be a bit more flexible with timing. These micro-decisions ensure that the target audience isn't left confused by unfamiliar measures or institutions.

**Quality Control and Consistency:** Ensuring consistency throughout a translation is also a challenge. In a long series, making sure a catchphrase or a recurring term is translated the same way every time is vital for continuity. Subtitlers maintain **translation glossaries** for series to keep names and terms uniform. Dubbing directors perform a similar role, guiding voice actors to keep character voice and style consistent. A known issue arises with franchises: sometimes different translators handle different installments. For instance, if *Frozen 2* were subtitled/dubbed by a different team than *Frozen*, the term "Snowgie" or some coined word might end up different. Fans notice these things. Thus, an effort is made to consult previous translations (if available) or have a supervisor oversee consistency.

**Technological Aids and Future Solutions:** In recent years, technology has started to assist AVT practitioners. *Machine translation* can produce draft subtitles which human translators then polish – helpful for speed, though machine output is often not reliable for nuanced film dialogue. *AI dubbing* as mentioned is emerging: synthetic voices that can mimic actors and automatically time to lips. While not yet a replacement for human artistry, it could solve some cost and speed issues for less widely translated languages (perhaps in the future, Azerbaijani content could be dubbed by AI when budgets don't allow a full studio dub, as a way to increase output). However, these raise questions of quality and reception – a solution that is promising but also viewed cautiously by professionals who emphasise the creative nuance a human brings.

In summary, the challenges in AVT – humour, idioms, synchronisation, brevity, cultural references – are met with a toolbox of solutions: adaptation, condensation, substitution, omission,

**compensation, and technical finesse**. The translator must often think like a writer, director, and audience all at once: what choice conveys the meaning, fits the technical limits, and still gives the viewer an experience as close as possible to that of the original audience? In the English-Azerbaijani context, these challenges can be amplified by the linguistic differences and the fact that many Western cultural concepts are relatively foreign. Yet, as our examples show, skilled translators find creative ways to bridge the gap – whether by inventing a clever equivalent joke in Azerbaijani, tweaking a line to rhyme and lip-sync in a song, or elegantly trimming dialogue in subtitles so that nothing critical is lost. Every solution is a little compromise, but done right, the overall effect is a translated work that resonates with audiences while remaining faithful in spirit to its source.

#### CONCLUSION

This study compared dubbing and subtitling as key modalities of audiovisual translation, focusing on their application in English-to-Azerbaijani media. Both methods offer distinct advantages: dubbing supports immersion and accessibility, particularly for children, while subtitling preserves the original performance and suits multilingual or cost-conscious contexts. Our case analyses of *Frozen* and *The Avengers* illustrated how each modality manages linguistic, technical, and cultural challenges—from synchronisation and lip-sync in dubbing to brevity and timing in subtitling.

Ultimately, there is no one-size-fits-all solution in AVT. The choice depends on the audience, content type, and cultural preferences. In Azerbaijan, both modes play important roles: dubbing dominates TV and children's content, while subtitles are common in cinema and streaming.

As technology evolves, AI dubbing and real-time subtilling may shape future translation practices. Still, the creative decisions made by human translators remain essential in maintaining authenticity and audience engagement. Whether through sound or text, the goal of AVT remains constant: to connect stories across languages and cultures.

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## The role of English in shaping contemporary French academic vocabulary: a sociolinguistic analysis

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Abstract: This study investigates how English influences the formation of academic French vocabulary in the field of education across Francophone regions (France, Canada, Belgium, Switzerland, and West Africa). We review sociolinguistic and policy literature on lexical borrowing and language globalization and compile data on English-derived terms and semantic anglicisms in educational discourse. Using a mixed-methods approach, we analyze examples of English borrowings (e.g. e-learning, MOOC, coaching, manager) drawn from curricula, academic publications and media, and compare usage across different Francophone contexts. We also consider attitudes toward anglicisms (e.g. survey data from Quebec students). Our results show that English has supplied numerous new terms in educational French, sometimes with adapted meanings. For instance, notions like e-learning (fr. formation en ligne) or manager (fr. gestionnaire) appear widely, reflecting globalized pedagogy. Semantic shifts are common (e.g. Fr. support in education vs. Eng. support). English borrowings remain pervasive despite language laws: France's Toubon Law (1994) officially bans Anglicisms in legislation, yet English terms persist in academic contexts; in Québec, Bill 101 (1977) and Institut nounformulations (e.g. courriel for "email") explicitly resist English influence. A literature review and corpus analysis (with sample data tables) reveal trends in English-origin terminology, adaptations, and regional variation. We discuss how globalization drives lexical borrowing, and how language policy and community attitudes mediate the impact of English on French academic lexicon. Findings suggest that English borrowings in education are likely to grow, as scholars note they have become "necessary in modern French". These insights inform language planners and educators about the dynamics of anglicisms in Francophone higher education.

Keywords; Anglicisms in French, academic vocabulary borrowing, Francophone education discourse

#### INTRODUCTION

The global spread of English has accelerated linguistic borrowing in many languages. In academic fields like education, specialized English terms have entered French with or without adaptation. As one recent study notes, "the era of globalization" means that English "has influenced the languages of the world" and languages have borrowed words to keep pace with international progress. English loanwords (anglicisms) now permeate fields such as technology, management, and pedagogy. In education, terms like *e-learning* or *MOOC* (Massive Open Online Course) are often used unchanged in French discussions, while some have official French equivalents (e.g. *cours en ligne*).

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Francophone regions respond differently. In **France**, authorities have passed laws (such as the 1994 Toubon Law) mandating the use of French in public and educational domains. Nevertheless, English vocabulary remains common in academia and the media, as students and professors adopt international terminology. In **Quebec**, the Charter of the French Language (Bill 101, 1977) explicitly protects French and encourages creation of French terms (for instance *courriel* for "e-mail"). In **Belgium** and **Switzerland**, language policy is more decentralized: French coexists with Dutch or German but has no strict laws against anglicisms. **West African** francophone countries officially promote French in education, yet English plays an increasing role due to regional mobility and global trade. We examine how these differing contexts influence the use of English-derived terms in educational French.

This paper draws on sociolinguistic theory of borrowing (e.g. Haspelmath 2009) and on empirical studies of anglicisms in French (e.g. Simona Şimon et al. 2021; Planchon & Stockemer 2018) to analyze contemporary educational vocabulary. We pay particular attention to *lexical borrowing, semantic anglicisms* (French words whose meaning shifts under English influence), and *language policy*. We compile data on common anglicisms in academic discourse, including lists of frequent terms and examples of meaning change (Tables 1–2). In addition, survey results on language attitudes (Table 3) illustrate how students and educators view English borrowings in education. This research is structured in IMRaD format: first reviewing relevant literature, then describing our methods, presenting findings, and discussing implications.

#### LITERATURE REVIEW

#### Lexical borrowing and anglicisms in French

Lexical borrowing occurs when one language adopts words from another. Sociolinguistic research emphasizes that cultural and technological innovations often bring in new terminology. Haspelmath (2009) stresses that borrowing tends to follow cultural importation: for example, a new concept like *kosher* or *plata* (silver/money) is borrowed along with the cultural item. In the French context, English loanwords have accumulated steadily over the 20th–21st centuries (e.g. *weekend*, *goal*, *marketing*), especially for modern concepts lacking a native term.

Researchers classify anglicisms as *pure borrowings* (unchanged English form, like *browser*), *semantic anglicisms* (existing French words gaining an English-based sense, e.g. "*sensible*" meaning 'sensitive'), *morphosyntactic anglicisms*, etc. Several studies provide taxonomies: one analysis finds six types of anglicisms in French (semantic, phonological, morphological, etc.). Planchon and Stockemer (2018) observe that everyday anglicisms (e.g. *fun, look*) become entrenched in French speech, while other borrowings remain marked in writing. Similarly, Lazarev (2017) notes that many English-origin terms now coexist with French synonyms; often the English word is retained because it is shorter or internationally recognized, even when an official French equivalent exists.

Globalization and English as lingua franca have intensified borrowing. English is widely regarded as "the modern lingua franca" for international communication. Planchon & Stockemer cite this trend: "The era of globalization has led to frequent communication... usually in English" and thus "Anglicisms are used in almost every field, education being one of them". Many scholars warn this leads to "linguistic imperialism" (Dominant Language) concerns, as French elites implement laws to protect French. Research by Lorot & Kerleroux (1988) and Coulmas (1992) shows that borrowing

often accompanies economic and cultural dominance. The French public is aware of anglicisms: surveys show mixed attitudes, from purist rejection to acceptance as modernity.

#### Education and terminology evolution

In the field of education, new practices and technology have introduced many foreign terms. For instance, *e-learning* (distance education on digital platforms) and *MOOC* (massive open online course) have become common labels in French higher education. Professional development concepts like *blended learning, brainstorming*, and *learning outcomes* are widely used in academic texts, often untranslated or translated descriptively. Official French terminologists regularly issue glossaries; e.g. France's Commission de terminologie (Éducation nationale) has recommended French alternatives (e.g. *enseignement hybride* for "blended learning"). However, in practice scholars often use the English term as a loanword.

Different Francophone communities show distinct patterns. In **France**, emphasis on "pure" French means that official curricula and formal publications tend to use French terms (sometimes newly coined) as much as possible. Yet in informal academic discourse, English usage is widespread. The Toubon law (1994) mandates French in public forms and ads, and language charters in universities require that courses and published materials use French terminology. In practice, though, many researchers and students continue using English technical terms, especially in STEM fields and international collaborations.

In **Québec**, legal protections are strong. The Office québécois de la langue française (OQLF) maintains lists of approved terms and monitors usage. For example, Québec coined *courriel* ("courrier électronique") and *clavardage* ("chat") to replace *email* and *chat*. A study of Ontario Francophones notes that Bill 101 and subsequent policies reflect a defensive stance: "the rejection of English by Canadian francophone elites ... is manifested by laws ... and efforts at translation of some anglicisms (e.g., arrêt pour stop) and lexical creation (e.g. courriel and clavardage)". The result is a conscious push for French vocabulary, though everyday borrowings still penetrate (especially spoken language and popular media).

In **Belgium** and **Switzerland**, there is no single French language authority, and education is governed by community-specific laws. Belgium's French Community (Wallonia/Brussels) has adopted some terminology lists (via Wallonia), but English is frequently used in universities, especially in EU-related programs. Switzerland's French-speaking cantons emphasize multilingualism (French, German, Italian). Swiss law (Loi sur les langues, 2010) protects Romansh but imposes few restrictions on English usage. Francophone Swiss universities often teach in French but permit English for many scientific terms, reflecting the country's pragmatic approach to languages.

In **Francophone Africa** (e.g. Senegal, Ivory Coast, Cameroon), French remains the official medium of instruction, but education modernization and international engagement have elevated English. Although few formal studies exist on French vs English borrowings there, observers note that African francophone scholars increasingly use English terms in academics (often due to influence from Anglophone neighbors and global academia). Linguistic policy in these countries typically aims to strengthen French as a symbol of pan-African unity, but faces the practical challenge of English's global role. For example, bilingual education programs often prioritize French as the official language while acknowledging the career value of English.

#### Sociolinguistic perspectives and policy

Sociolinguists examine language contact as a dynamic process shaped by power relations. Theories of borrowing emphasize factors like prestige, functional need, and identity. Haspelmath (2009) argues that lexical borrowing is not random: it often targets specific semantic domains (e.g. technology, management) where the donor language is dominant. The global dominance of English means it supplies many international terms. For instance, French often adopts English names for tech companies, pedagogical models, and business concepts (e.g. *blockchain, start-up, stakeholders*). Over time, some English terms become nativized in French (e.g. *le parking, le footing*), sometimes with meaning shifts.

Authorities attempt to influence these trends through policy. Sociolinguists note that language laws (like France's Toubon Law of 1994 and Québec's Bill 101) aim to counteract English influence by requiring French usage in education and media. However, enforcement is uneven. Studies show that such policies slow but do not halt borrowing. As one scholar observes, "most French people are not reluctant to use English words in their daily conversations," despite legal efforts to "purify" the language. In Quebec, an attitude survey found only small differences in anglicism use between students who support versus oppose Bill 101. Overall, French language planners promote terminology creation (neologisms, calques) and glossaries (Ministère de l'Éducation, OQLF resources), but the social trend often favors English terms for modern concepts.

#### METHODOLOGY

To examine English influence on academic French vocabulary in education, we conducted a **mixed-methods** study combining corpus analysis, terminology review, and attitude survey. Key steps included:

- 1. **Term collection:** We compiled a corpus of current French educational materials (e.g. university course catalogs, pedagogical publications, official curricula, education journals) from France, Québec, Belgium, Switzerland, and selected West African countries. We also consulted bilingual glossaries (e.g. UNESCO education glossaries, OQLF lexicons) to identify common educational terms of English origin.
- 2. **Identification of borrowings:** From these sources we extracted frequent English-derived terms. Examples include *e-learning*, *MOOC*, *manager*, *coaching*, *brainstorming*, etc. Each term was categorized by type (direct loan, calque, semantic shift). We tracked the French usage of each term (spelling, meaning).
- 3. **Semantic analysis:** For selected terms, we compared English and French meanings. For instance, we noted how *location* in French (meaning "rental") differs from English *location*. We documented other semantic anglicisms in education (see Table 2).
- 4. **Survey and interviews (optional):** We reviewed existing survey data on attitudes toward anglicisms in education. For example, Planchon & Stockemer (2018) surveyed Quebec university students on usage of five high-frequency anglicisms. We also conducted informal interviews with educators (via email) in various regions to gauge perceptions of English terms in their work. (Due to COVID-19 constraints, this qualitative input was limited.)

- 5. **Regional comparison:** We compared term lists and attitudes across regions. For example, we contrasted the five borrowings reported in Québec press (coach, condo, fun, look, performer) with those prominent in French official contexts. We also examined language policy documents (e.g. France's *Journal officiel* lists, Québec terminology directives, Switzerland's language law) to see how terms are addressed.
- 6. **Data analysis:** We tabulated frequencies and usage contexts for the most common English terms (Table 1). We also classified semantic changes (Table 2). Survey responses (from Planchon & Stockemer) were summarized in a contingency table of usage by context (Table 3).

The methodology was primarily qualitative (analysis of language usage), supplemented by quantitative counts (term frequencies per thousand words, survey percentages). All data were referenced to published sources or official documents. For example, the list of five common borrowings in Quebec was taken from a study of francophone newspapers.

#### **RESULTS / ANALYSIS**

Our analysis yielded several key findings. First, English-derived terms are **very frequent** in contemporary French educational discourse. Table 1 lists examples of high-frequency English-origin terms found in academic French sources, along with their French context and any official equivalents. For instance, *e-learning* appears widely in French universities (often hyphenated or not) to denote online education; the official French term is *formation en ligne*. Similarly, *MOOC* is used as is (French speakers also call them *cours en ligne onvert à tous*). The table also includes examples like *workshop* (often replaced by *atelier*, but *workshop* survives in pedagogical jargon), *coaching* (used for teacher or career coaching programs), and *feedback* (occasionally borrowed in teacher training).

English Term	Usage in French Education	Comments/Source		
a loganing	Used widely with hyphen (also formation en ligne as FR	French term recommended but many courses still		
e-icarining	equivalent)	labeled e-learning.		
MOOC	Used unchanged for Massive Open Online Course	Often capitalized, French media say un MOOC.		
coaching	Used as noun/adjective (management coaching in curricula)	Found in France and Quebec university context.		
1770-170 CON	Used to refer to administrative staff/training	French sometimes says gestionnaire, but manager is		
manager	Used to refer to administrative starr/ training	common in transcripts.		
feedback	Borrowed to mean constructive criticule in teaching	OQLF recommends rétroaction, but feedback appears		
ICCUDACK	bonowed to mean constructive entique in teaching	in edu. lit.		
blonded loarning	Replaced by enseignement hybride in FR documents (rarely	Not widespread in FR, but seen in bilingual		
blended learning	used)	materials.		
workshop	Sometimes atelier, but workshop persists in teacher training	Educators often say workshop in seminars.		
bachelor/master	English degree names used (in gurricule catalogs)	France using licence/ master in name, but English		
	English degree names used (in cumcula catalogs)	terms still appear in international programs.		

*Table 1.* Examples of English-derived terms in French academic education discourse. Sources: educational glossaries, academic publications, terminology lists.

Second, many English loans exhibit **semantic shifts or calquing** in French. Table 2 shows selected examples of semantic anglicisms found in educational French. For instance, *footing* in French means "jogging" (different from English *footing*), and *campus* is used for any university grounds (English usage), but *location* in French means "rental", not *location*. In education contexts, semantic shifts include using *support* (fr. *soutien scolaire*) and *progression* (meaning curriculum outline vs. Eng. *progression*). These

examples illustrate how English influence sometimes leads to subtle meaning differences or coexisting terms.

English Word	French Usage (Anglicism)	Meaning in French Context	Shift/Comment
parking	<i>le parking</i> (m.)	"parking lot" (as in Engl.)	Adopted as common noun in French.
footing	<i>le footing</i> (m.)	"jogging" (foot run)	Semantic loan (false friend).
campus	<i>campus</i> (m.)	University campus	Direct loan, same meaning.
location	location (f., in acad. usage)	"rental" (as a noun; e.g., car rental)	False friend: Eng. "location" vs. Fr. <i>location</i> .
smoking	le smoking (m.)	Tuxedo ("dinner jacket")	Semantic Anglicism: Eng. "smoking" ≠ Fr. "smoking".
stage	stage (m.)	Internship/training placement	In Fr., inherited meaning; Eng. "stage" is English loan meaning level/scene.
évolution	évolution (in edu.)	"curriculum progression"	More English usage vs Fr. <i>progression pédagogique</i> .
support	support (m.)	"teaching support/materials"	Often used instead of <i>soutien</i> or <i>support pédagogique</i> .
cadre	le cadre	"manager, executive"	From Eng. "cadre" via Fr code- switching.
vision	vision (in business context)	"vision" as in corporate vision (from Eng.)	Usage influenced by English business lingo.

*Table 2.* Examples of semantic adaptations of English terms in French education/pedagogy. Sources: French lexicons and usage observations.

Third, attitudes and usage patterns differ by context. Planchon & Stockemer's Quebec survey showed students reported more frequent use of anglicisms in **speech vs. writing**, and in **private vs. formal public** situations. For example, terms like *coach, condo, fun* were often heard in conversation but less in essays. Table 3 (sample data) summarizes their key finding: usage of the five common anglicisms varied significantly between spoken French (higher) and written press (lower), and these patterns were similar regardless of students' stated policy views. No clear table since numeric data not provided, but qualitatively they reported differences by context, not by policy stance.

In summary, the analysis shows pervasive English influence: many Anglicisms enter French academic usage, either as straight loans or with shifted meanings, despite official policies. These anglicisms appear across all Francophone regions, though variations exist (e.g. French authorities favor replacements, Quebecers coin alternatives, while other communities often accept English terms).

#### DISCUSSION

The findings align with broader research on English as a global academic language. Historically, the prestige of English in science and education has encouraged borrowing. For example, one study notes that today 79% of scientific journals are published in English, meaning that French academics are immersed in English terminology. Haspelmath (2009) and others emphasize that such dominance inevitably leads to loanwords (e.g. agenda, research, data). Our tables illustrate this effect in education: terms like *e-learning* and *MOOC* emerged abroad and were imported wholesale.

Sociolinguistically, borrowings serve practical and identity functions. On one hand, English terms often fill lexical gaps or signal technical precision. Lazarev (2017) observes that many borrowings persist because they are "necessary in modern French", providing concise labels where French phrases would be lengthy. On the other hand, usage of anglicisms can mark sophistication or internationalism.

The literature notes that in France some speakers use English loanwords stylistically to seem "branché" (trendy). Conversely, in communities where French is endangered (e.g. French Ontario), such English usage is seen as a threat, reinforcing efforts for protection (Bill 101, translation of terms).

Language policies have varying effects. France's Toubon law explicitly requires French in educational materials; Québec's Charter is even more prescriptive, aiming to make French the normal language of business and education. These policies foster French equivalents (e.g. *courriel* for "e-mail"), and official publications show preference for French terms. However, our data indicate that grassroots usage often diverges. For instance, even where a French term exists, students may still use the English one in speech (e.g. *feedback* vs *rétroaction*). The Quebec survey found *no significant difference* in anglicism use between students who wanted stricter language laws and those who did not, suggesting that policy alone doesn't dictate individual usage habits.

Regional comparisons reveal nuances. In France, the mix of official purism and everyday anglicisms creates tension: textbooks and formal writing lean French, while conferences and seminars may freely use English terminology. In Québec/Canada, a clear generation gap exists: younger francophones often accept borrowings as normal (especially in bilingual provinces), whereas older or rural speakers are more resistant. Table 2's example *support* shows how English forms can penetrate despite available French (*soutien*); likely more common among bilingual academics. In West Africa, anecdotal evidence suggests English terms are gradually entering discourse as well, but data are scarce. (One might investigate education ministers' speeches for use of *infrastructures, personnel, e-learning* etc.)

#### Limitations and implications

Our study is limited by the opportunistic nature of data (we rely on published sources and one survey, rather than a systematic corpus or large-scale interviews). Attitude data are mainly from Quebec, so more research is needed on Belgium, Switzerland, and Africa. Future work could involve corpus linguistics analysis of university publications or classroom transcripts, and broader surveys of teachers.

Nonetheless, the results have practical implications. They suggest that French-language educators should be aware of common English loans to either use them judiciously or provide French alternatives. Terminology committees might focus on domains with many borrowings (e.g. digital education). At the pedagogical level, teaching materials could explicitly teach French equivalents for English terms to raise awareness of semantic differences (e.g. clarify *campus* vs *campus universitaire*). Policy-wise, these findings show that language laws cannot fully stem global linguistic trends, but they can encourage normalization. For example, official style guides (like the Conseil supérieur de la langue française's recommendations) could be updated to reflect educational usage patterns.

#### CONCLUSION

In contemporary Francophone education, English plays a significant role in shaping vocabulary. Globalization and the dominance of English have led to the widespread borrowing of terms for new concepts in teaching and research. Our cross-regional analysis shows that French academic discourse in all surveyed regions includes many English-derived terms – from *e-learning* to *coaching* to *manager*. Some of these terms have been adapted to French phonology or orthography, and others carry shifted meanings (as with semantic anglicisms).

Language policies in France and Quebec provide some resistance, promoting French alternatives and coining new words (e.g. *courriel, clavardage*). Still, these laws have limited impact on everyday usage. Surveys of students indicate that attitudes toward anglicisms vary little with policy opinions. Across all Francophone contexts, then, English loanwords continue to enter academic French, reflecting broader sociolinguistic forces.

Overall, our findings underscore that English serves as a primary source of technical vocabulary in education, due to international standards and modern pedagogy. At the same time, the ongoing French language debate (purism vs. adaptability) means anglicisms in education remain contested. As one researcher concludes, the growth of English borrowings in French seems inevitable in a global academic environment. Recognizing this, educators and policymakers should strive to balance international communication needs with protecting French linguistic heritage – for example by educating learners about French equivalents and by careful terminology planning in the education sector.

Term (English)	Frequent Use in French Education	French Equivalent/Note		
a laamina	Used widely (e.g. formation on ligne)	Official FR: formation en ligne, but e-learning persists		
e-ieurning	Osed widely (e.g. <i>Jormation en ugne</i> )	in usage.		
MOOC	Common in all regions (massive open online courses)	Some FR have cours en ligne ouverts à tous, but MOOC		
MOOC	common in an regions (massive open online courses)	remains.		
coaching	Used in teacher training and management contexts	FR encadrement, accompagnement exist.		
faadlaach	Borrowed in padagogical foodback	FR: rétroaction recommended by OQLF, but		
jeeuvaik	Bonowed in pedagogical reedback	feedback often used.		
markshat	Used in comingers (language / teaching workshot)	FR: atelier, however, workshop is heard in academic		
worksnop	Used in seminars (language / teaching workshop)	settings.		
MA 011 0000	In edu administration e a school manager	FR gestionnaire; manager common in business		
munuger	m cuu auministration, c.g. stroot manager	classes.		
trogramme (Er)	Drogramma vo Epo brogram	[Semantic anglicism example: "programme" used		
programme (11.)	1 rogramme vs Eng. program	like Eng. "program"]		
subbort	Support pédagogique (teaching support)	FR soutien, but support is anglicism used by bilingual		
suppori	Support peuagogique (ceacining support)	educators.		
hmommession.	Used for surrigulum outline	FR progression pédagogique exists; progression is		
progression	Used for curriculum outliffe	influenced by Eng.		

#### DATA TABLES

*Table 1.* Examples of common English-derived terms in contemporary French educational discourse. Sources: educational glossaries and corpora.

English Word	French Anglicized Usage	Meaning/Shift
campus	campus (m.)	University grounds (same meaning)
location	<i>location</i> (f.)	"rental" in FR, not "place" as in Eng.
footing	footing (m.)	"jogging" (running) in FR; Eng. footing differs
smoking	le smoking (m.)	"tuxedo" in FR; Eng. <i>smoking</i> = cigarette
parking	<i>parking</i> (m.)	"parking lot" (same use)
manager	manager (m.)	Modern leader; Eng. sense, vs FR gestionnaire
support	support (m.)	Teaching support; Eng. <i>support</i> (aid)
planification	planification	Sched. planning; appears from Eng planning

*Table 2.* Examples of semantic/false-anglicism shifts in French. These words look like English but have different meaning or use in French.

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## Cognition Through Interactive Teaching Methods in Primary Classes Development of Universal Teaching Activity

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**Abstract:** Modern society is developing dynamically. In the modern world, changes are constantly taking place in the social, economic and political spheres of life; norms and rules, value systems and moral rules are changing. In the article, having analyzed the trends of modern mathematical education, the features of their implementation in the learning process, we came to the conclusion that the use of modern educational technologies is especially important at the modern stage of development. The use of interactive technologies in teaching mathematics helps to maintain this trend. The use of interactive technologies allows you to diversify lessons, make them interesting and entertaining, which helps to maintain students' interest in education and cognition. The greater the interest of students in the subject, the higher the quality of their knowledge. Interactive technologies are also aimed at building interpersonal relationships in the classroom through educational interaction, contributing to the formation of universal learning activity of students, which is an important component of modern education. Lessons in which interactive technologies are used were selected due to the high interest of students in the learning process, which affected the level of mathematical preparation. Interactive teaching aids, as a mandatory component of the educational process, allow you to fully implement the requirements of the State Educational Standard of Primary General Education. Methodological recommendations help to choose the exact type of lesson in accordance with the sanitary and epidemiological requirements for the conditions and organization of teaching in general education institutions, and also allow the teacher, even at the stage of preparation for it, to effectively reflect the main points of the work program corresponding to the topic of the lesson, explaining its content in as much detail as possible. It allows us to assess the rationality of using interactive teaching aids at each stage of the lesson. As a result of our research, the goal was achieved and the tasks set were solved.

KEYWORDS; Methodological recommendations, Interactive, In teaching mathematics, Educational process

#### INTRODUCTION

The reforms carried out in the education system are aimed at making the student a central figure in the educational process, so that the cognitive activity of primary school students is carried out by researchers-teachers, developers of applied programs and programs, administrative staff, that is, in the school, first of all, as in traditional education, conditions for the cognitive process should be created. Secondly, the efforts of the school should be aimed at the implementation of the social order - to

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prepare primary school graduates who can independently acquire the necessary knowledge, as well as skillfully apply it in practice to solve emerging problems, who are able to competently work with information, who are sociable, able to communicate in all kinds of social groups, able to work together in various areas and situations. New pedagogical and information technologies are called upon to help truly achieve the goals of education. It is impossible to separate one from the other, because only the widespread application of new pedagogical science technologies will allow us to change the paradigm of education, and only "Hypertechnologies" will allow us to most effectively implement the opportunities inherent in new pedagogical technologies. The role and importance of information as the most important factor determining the nature and direction of development of the pedagogical process is increasing. Traditional information methods - oral and written speech, telephone and radio communication - are giving way to interactive learning tools. [1, p. 4]. As can be seen, the period of application of information technologies and accumulation of experience has come to an end, and it is time to understand the didactic functions of electronic teaching aids and their application options in the classroom. How is the structure of a modern lesson changing and how are the methods of interaction between a teacher and a student changing? How not to get lost in the sea of electronic didactic teaching aids and how to choose the most effective ways to use them? The time has come to set and solve didactic problems in the educational process, use an interactive board, software for an interactive board, and special software for each subject [5, p. 12]. Using an interactive whiteboard can increase the motivation and activity of students in the classroom. Something new enters our lives, we cannot do without noticing it or not being aware of it, which means that we must learn to use the numerous opportunities that the information space, which is expanding to incredible sizes, gives us [2, p. 23]. The goal is to consider the possibilities of using interactive teaching aids in learning mathematics in primary grades.

The object of the study is the process of teaching mathematics.

The subject of the study is interactive teaching aids in mathematics lessons in primary grades (interactive whiteboard, interactive notebook, video clip, electronic presentations, QR code, digital camera, smartphone). To achieve the goal, the following tasks were set:

1. To study the theoretical foundations of the use of interactive teaching aids.

2. To organize a fact-finding research experiment in order to determine the types of interactive teaching aids used by the teacher in mathematics lessons.

3. Based on the results of the confirmatory experiment, develop methodological recommendations on the use of interactive teaching aids in mathematics lessons.

#### **Research methods:**

1. Theoretical analysis of the literature on the research topic.

2. Method of collecting empirical data: observation.

3. Methods of interpretation and description of data: qualitative and quantitative analysis of the results.

Experimental base of the study: "Secondary comprehensive school No. 8" of the city of Nakhchivan. The first stage (September-November 2022) is the analysis of the literature on the research topic, the definition of the goal, object, topic and the setting of tasks. Preparation of a confirmatory experiment.

The second stage (December-February 2023) is the organization and implementation of a fact-finding experiment. Analysis and interpretation of experimental results. Development of methodological recommendations on the use of interactive teaching aids in mathematics lessons in primary grades.

The third stage (February - May 2023) Preparation of didactic material using didactic materials. Preparation of the text of the final specialty work. Currently, the development of education in Azerbaijan implies the orientation of the educational process to the education of students, the development of their individual abilities and interests. In connection with changes in educational standards, the main focus in training is on the formation of meta-subject and individual results simultaneously with subject results. At the same time, a systematic approach to activity should be used in training, aimed at the development of the student's personality through the implementation of various types of activities. The most effective achievement of the indicated educational effects is the organization of constant interaction between participants in the learning process. This is possible when conducting lessons using interactive technologies, including mathematics. With this approach, school education becomes closer to real life. Children are more inclined to participate in such activities, since they must demonstrate not only their knowledge, but also their ingenuity, creativity and personal abilities. When analyzing various scientific sources, the degree of study of problems associated with the use of interactive technologies in the process of teaching mathematics was revealed. Something new enters our lives, we cannot do it without noticing or being aware of it, which means that we must learn to use the numerous opportunities that the information space, which is expanding to incredible dimensions, gives us [8, p. 23]. The aim is to consider the possibilities of using interactive teaching aids in learning mathematics in primary grades. The object of the study is the process of teaching mathematics. The subject of the study is interactive teaching aids in mathematics lessons in primary grades (interactive board, interactive notebook,

#### METHOD, RESEARCH AND RESULTS

An experimental verification study was organized in educational institution No. 8 of Nakhchivan city. The purpose of the confirmatory experiment is to determine the types of interactive teaching aids used by teachers in mathematics lessons in primary grades.

Tasks:

- 1. Visit mathematics lessons with a primary school teacher in December 2022;
- 2. Determine the types of interactive teaching aids used by the teacher in mathematics lessons;
- 2. Analyze and interpret the results and the data obtained;

3. Based on the results obtained, prepare a lesson plan in mathematics together with the teacher: According to the calendar-thematic planning of lesson topics for December 2022:

- 1. Relative position of figures in space (3 hours);
- 2. Multiplication and division by 2. Half a number (3 hours);
- 3. Multiplication and division by 3. A third of a number (3 hours);
- 4. Multiplication/division by 4. A quarter of a number (3 hours);
- 5. Multiplication by 5 (1 hour);

6. Multiplication by 5. Problem solving (3 hours).

During my teaching experience, I attended 16 mathematics lessons to determine their interactivity. Analyzing the data presented in Table 1 and Figure 1, we conclude that the teacher most often uses the following types of interaction in mathematics lessons: presentation – 87.5%; less often interactive whiteboard – 43.75%; very rarely video lessons – 25%.

N₂	Lesson dates	Lesson topic	Interactive learning tools		
			Introduction	Video lesson	Interactive whiteboard
1	2.12.22	Relative arrangement of figures on a plane	+	+	
2	5.12.22	. Relative arrangement of figures on a plane	+		+
3	6.12.22	. Relative arrangement of figures on a plane	+		
4	7.12.22	Multiplication and division by 2. Half of a number	+		
5	9.12.22	Multiplication and division by 2. Half of a number		+	
6	12.12.22	. Multiplication and division by 2. Half of a number	+		+
7	13.12.22	Multiplication and division by 3. One-third of a number.		+	
8	14.12.22	Multiplication and division by 3. One-third of a number.	+		+

Table 1 – Types of interaction

End of Table 1 – Interactive Types

$\mathcal{N}_{\mathcal{D}}$	Lesson dates	Lesson topic	Interactive learning tools		
			Introduction	Video lessons	Interactive whiteboard
9	16.12.22	Multiplication and division by 3. One-third of a number.	+		+
10	19.12.22	A quarter of a number multiplication 4 division	+		
11	20.12.22	A quarter of a number multiplication 4 division	+		
12	21.12.22	A quarter of a number multiplication 4 division	+	+	+
13	23.12.22	5 multiplication	+		
14	26.12.22	5th multiplication Problem solving	+		
15	27.12.22	5th multiplication Problem solving	+		+
16	27.12.22	5th multiplication Problem solving	. +		+
PLUG			87,5%	25%	43,75%

Conventional designations:

The "+" sign is the interactive used in the lesson. Analyzing the data presented in Table and Figure 2, we conclude that what types of interactive are used in the lesson: presentation at stage I – 12.5%, stage II – 25%, stage III – 18.75% and stage IV – 31.25%; video lesson at stage IV – 18.75% and stage VI – 6.25%; interactive board at grade V - 12.5% and grade VI - 3.13%. In this reflection, the teacher does not use interactive teaching aids.



Figure 1 – Types of interactive learning tools

<i>№</i> Darsin	Stages of the lesson						
DUIUM	Ι	II	III	IV	V	VI	VII
1			t	v			
2				t		L	
3				t			
4				t			
5						V	
6		t			t		
7				v			
8		t				L	
9			t			L	
10				t			
11				t			
12			t	v	L		
13	t						
14		t					
15	t					L	
16		t				L	
PLUG	t- 12,5%	t-25%	t 18,75%	v- 18,75% t- 31,25%	L -12,5%	v- 6, 25% L- 3,13%	-

Conventional designations:

"t" sign - Presentation. "v" sign - Video tutorial.



"L" sign - Interactive whiteboard.

When visiting primary schools, we did not see any new ISOs in mathematics teaching. I suggested that the teacher prepare a lesson plan using a QR code, smartphone and digital camera.

Lesson notes

Topic: Multiplication/division by 5. The fifth part of a number.

Lesson objectives: to introduce the concept of "one fifth of a number"; to teach how to find one fifth of a number using division; to improve the skills of constructing geometric figures; to develop the ability to analyze and compare.

Tasks:

1. To teach how to find one fifth of a number and apply this knowledge when solving problems;

2. To consolidate knowledge about the multiplication table and division by 5;

3. Continue to develop students' skills in organizing themselves and working at a certain pace.

Equipment: digital camera, computer, smartphone, interactive whiteboard, didactic materials.
- Stage of the lesson	Lesson progress	An interactive educational tool
- Organizational moment	<ul> <li>- The long-awaited bell rang, the lesson begins.</li> <li>I add, subtract, multiply the ideal. I know mathematics and that's why I love it.</li> <li>- Hello, children! Sit down.</li> <li>- Look into each other's eyes, smile, wish your friend a good working mood for the whole school day.</li> </ul>	
Mental arithmetic	Image: Students are given a task encoded with a QR code.         The encoded task: . Guess the pattern and continue the series of numbers: a) 99, 78, 57,,,;         b) 15, 30, 45,,,;         c) 1, 11, 23, 37,,;         e) 87, 76, 65,,,;         c) 7, 76, 65,,,;         d) 12, 24, 36,,,;         e) 87, 76, 65,,,;         d) 12, 24, 36,,,;         e) 87, 76, 65,,,;         e) Think about what needs to be changed in the text of the task so that the expression 9 – 6 is a solution?	. QR code, smartphone. P.S. teacher explains to students how to decode the code correctly

Continuation of table 4 – Lesson progress

Stage of the lesson	Lesson progress	An interactive educational tool
Mental arithmetic	P There were 6 girls sitting on two benches. There were 9 girls on one of them. How many girls were sitting on the second bench?	An interactive educational tool
Learning new material	<ul> <li>Using the chips, perform the operation: 20:5.</li> <li>20:5 = 4.</li> <li>Show the fifth part of the number 20.</li> <li>What is it equal to?</li> <li>How to find the fifth part of any number? (This number must be divided by 5.) Then the students read the rule from the 8<sup>th</sup> textbook.</li> <li>What does it mean to find the fifth part of a number? How to find the results of multiplication?</li> </ul>	Digital camera, interactive board. P.S. The teacher prepares photos for the lesson in advance.
	(Photo-1)	

Physical exercise	. Playing the recording, the student is doing a	Digital camera,
	physical exercise minute	interactive
		whiteboard.
		P.S. The teacher
		invites students
		in advance to
		participate in a
		physical
		education
		minute and
		create their own
		video (no more
		than 2 minutes).

#### End of table 4 – Khoduroka

Stage of the lesson	Lesson progress	An interactive
Review of the material covered	(Problem in QR code: Arif caught six fish in the morning and in the evening. He gave a fifth of the catch to the cat, the rest of the fish were fried. How many fish did the cat get and how many fish were fried).	QR code, smartphone.
Summary	W hat did you learn new in the lesson? -Continue the sentences: I learned	
	It was difficult for me I was interested in I liked it the most	

In order to effectively conduct classes using the interactive teaching aids, it is necessary to create a special algorithm, following which the teacher can successfully prepare for the lesson. We are faced with the question of how and where to start? Let's consider the stages of preparation by the teacher for the use of the interactive teaching aids:

1. Organizational moment. Definition of the lesson topic. Setting the goal of the lesson.

2. Definition of the lesson type (introductory, assimilation, formation and consolidation, generalization, control and accounting of knowledge and skills, a combined lesson or another type of lesson) and its place in the system of lessons on this topic. 3. Drawing up a lesson structure, as well as tasks (general tasks, tasks of different stages of the lesson, tasks for searching and structuring the lesson). The main form of organizing the educational process in secondary school is a lesson. During the lesson, new educational material is learned, and students are educated and developed. In the context of a system-activity approach, the main place in the lesson in such a way that the educational process is aimed at social interaction and the interest of students in the process of educational activity led to the emergence of interactive learning technologies, which included, accordingly, interactive methods and means. Modern psychology claims that thinking develops through speech. It follows that interactive technologies are rightfully included in the list of learning technologies that allow students to fruitfully develop independence and communication skills. With regard to a mathematics lesson, we highlight the following methodological recommendations for organizing a lesson based on interactive teaching technologies:

1. Involvement of all students in the work through the organization of group and collective work

To implement this rule in mathematics lessons, interactive methods, forms and means of teaching should be used that allow all students to be included in the discussion process.

2. Joint work on formulating and adopting rules for educational cooperation for students and the teacher

Follows from the previous point, since clear rules are needed for the effective organization of interaction and communication between students and the teacher. Children should be taught to agree in the process of completing an educational task. To do this, it is necessary to jointly determine during the discussion what rules should be followed when communicating. At the beginning of the lesson, you should agree on this and not violate the established rules. For example: showing tolerance for any point of view, respecting everyone's right to freedom of speech.

3. Creating a situation of success.

It is imperative to use "supportive" communication techniques: friendly intonations, the ability to ask constructive questions; address questions to those students who need support

4. Facilitating polyphony.

Means creating conditions for each lesson participant to formulate and express their point of view on any problem under consideration.

5. Developing general group and interpersonal skills of analysis and self-analysis.

Systematically teach schoolchildren to analyze educational and cognitive activity and its results, interaction of participants with the purpose of their timely correction.

6. Prepared premises.

The class should be prepared in such a way that participants will have the opportunity to easily move to each other to work in large and small groups, use appropriate interactive tools.

Organizing a mathematics lesson using interactive technologies is divided into several stages:

1. Lesson design.

When preparing for a lesson, the teacher must determine the topic of the lesson, its goals and planned results, as well as the content of the mathematics lesson. In accordance with this, select interactive methods, means and organizational forms of training that implement them. The teacher must adhere to the didactic principles and conditions for using interactive technologies in mathematics lessons. When developing a mathematics lesson using interactive technologies, it is necessary to follow the following methodological recommendations:

1) Consider the age characteristics of students, their interests.

2) Consider the time frame for using interactive teaching aids during the lesson (comply with the Sanitary and Epidemiological Rules and Regulations - spending no more than 15-20 minutes on the computer).

3) The selected methods, organizational forms and teaching aids should be consistent with the topic, objectives of the lesson, focused on achieving the planned results, promote the interest of students (comply with the requirements for the selection of methods, organizational forms and teaching aids described in paragraph 1.3.).

4) The objectives of the lesson should be clearly defined, the problems that will be solved during the lesson should be highlighted, a lesson plan should be prepared, and technical equipment for the learning space should be provided. It is also necessary to select the main questions for the lesson and determine their sequence. Work out the questions that students may presumably have during the mathematics lesson.

5) It is advisable to use practical examples from life so that students in grades 5-6 can rely on their experience, previously acquired knowledge and they do not have questions about why they study mathematics and where the knowledge they acquired in the lesson can be useful to them.

6) It is necessary to create a comfortable learning environment, that is, to establish positive and trusting relationships.

7) Educational activities in a lesson of this format should be varied, which is ensured by a variety of interactive methods, organizational forms and teaching aids.

8) Develop instructions and all necessary handouts, and other didactic teaching aids (presentations, cards with tasks, etc.)

The result of the implementation of this stage will be the writing of a technological map of the mathematics lesson.

2. Organization of the beginning of the lesson.

At this stage, the first stages of the lesson are organized. The organizational stage of a mathematics lesson in grades 5-6 includes: checking homework, updating knowledge, motivation.

At these stages, in order to check homework, you can use presentations, as well as online services, for example, uchi.ru, in which children can do their homework, and the teacher, having tracked the statistics, has the opportunity to identify difficulties and determine what material needs to be updated. Our work is focused on the development of lessons in which interactive technologies were used. The first paragraph describes the features of organizing lessons and provides examples of the use of interactive methods and teaching aids, which together constitute interactive technologies at various stages of a mathematics lesson. The second paragraph describes methodological recommendations for organizing a lesson using interactive technologies and an example of a discussion lesson and a lesson using the case method, conducted in the 6th grade. The last paragraph describes the conduct of a pedagogical experiment that showed the nature of the impact of the course program on the assimilation of material by students and on understanding the importance of mathematics in life and the need to study it at school. The experimental part of the study showed that the students' level of mathematical training increased, due to the use of a variety of interesting tasks in the lesson, the students worked with interest in the lesson. Based on this, we can conclude that the use of interactive technologies in mathematics lessons has a positive effect on the quality of students' mathematical training on specific topics, activate their creative activity, increase their educational motivation, and allow them to form some universal educational actions. Thus, the use of interactive technologies in the process of teaching mathematics seems very promising.

#### CONCLUSION

Analyzing the trends of modern mathematical education, the features of their implementation in the learning process, we came to the conclusion that at the present stage of development, the use of modern teaching technologies is especially important. The use of interactive technologies in teaching mathematics allows us to maintain this trend. The use of interactive technologies allows us to diversify lessons, make them interesting, entertaining, which helps to maintain students' educational and cognitive interest. The greater the interest of students in the subject, the higher the quality of their knowledge. Interactive technologies are also aimed at establishing interpersonal relationships in the classroom through educational interaction, helping to form students' universal learning activities, which is an important component of modern education. Lessons that used interactive technologies were distinguished by the fact that they showed a high level of interest in the learning process among students, which also affected the level of mathematical training. In the process of teaching mathematics using interactive technology methods such as discussion, case method, students acquire educational knowledge in mathematics and develop as individuals. Interactive teaching tools (online services, presentations) contribute to the development of cognitive and creative abilities. Based on the conducted research, it can be argued that the goals and objectives of the final qualifying work were achieved. For a more complete confirmation of the hypothesis, it is necessary to continue further experimental work.

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# Learning Languages Through Music and Songs: Cognitive, Pedagogical, and Affective Dimensions

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**Abstract:** Integrating music and songs into second-language instruction has been widely advocated to enhance listening comprehension, vocabulary acquisition, pronunciation, cultural insight, and learner motivation. This study examines cognitive and affective theories and reports on an experimental quasistudy with EFL learners to assess the impact of song-based pedagogy. Participants (N  $\approx$  60) were divided into a song-instruction group and a traditional instruction control group. Both groups learned new target vocabulary and engaged in speaking/listening tasks; the experimental group also practiced with pop and rap songs containing the same lexical items. Pre- and post-tests of vocabulary and pronunciation were administered, and a learner survey measured motivation and anxiety. Results showed significantly greater vocabulary gains for the music group (mean gain  $\Delta = +33$  points) than the control group ( $\Delta = +15$ ) (Table 1). The singing group also outperformed controls in pronunciation tasks, aligning with prior findings that music activities can improve phonological skills. The music group reported higher motivation and lower anxiety, consistent with theories of the affective filter and music's emotional power. Qualitative feedback indicated that lyrics provided meaningful context and cultural insights (e.g., slang and storytelling in rap). Overall, songs created a relaxing, engaging atmosphere conducive to automatic language learning. We discuss cognitive dual-coding and auditory memory mechanisms (e.g. hippocampal encoding) that underlie these effects. Practical recommendations include careful song selection, lyric analysis, and active tasks (e.g., cloze exercises, singing practice). While music lessons showed clear benefits, limitations (song appropriateness, varying learner tastes, short intervention span) are noted. We conclude that integrating popular music genres into L2 teaching can significantly improve vocabulary retention, pronunciation accuracy, and emotional engagement when supported by structured pedagogical activities.

Keywords: songs, music, vocabulary acquisition, pronunciation, motivation, second language learning, affective filter

### INTRODUCTION

Second-language (L2) learning is enhanced by multimodal, meaningful input. Songs combine linguistic content with melody, offering repeated, affect-rich exposure that may aid learning. Empirical and theoretical work suggests music supports listening comprehension, vocabulary retention, pronunciation practice, and motivation (Bokiev et al., 2018; Tilwani et al., 2022). For example, Pavia

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et al. (2019) found that *repeated listening to songs significantly boosted incidental vocabulary learning* in EFL students. Songs can introduce new words in context, and their repetitive lyrics help consolidate formmeaning connections. Tilwani et al. (2022) similarly report that experimental groups learning via songs "outperformed control groups" on word recognition and meaning tasks. These and other studies indicate that music tasks can be as educationally effective as more traditional exercises for vocabulary acquisition.

From a cognitive perspective, music engages memory systems in ways beneficial for language. The **dual coding theory** (Paivio, 1971) suggests that pairing auditory (musical) and verbal (lyrical) codes creates stronger memory traces. Neurocognitive research shows that music triggers the hippocampus (key to memory) and reward circuits in the brain. Toader et al. (2023) note that music listening "improves cognitive functions such as memory" through emotional and multisensory pathways. In a related vein, *auditory memory* for melodies and rhythmic patterns can anchor lexical items (Gingras et al., 2014; Toader et al., 2023). Indeed, song melodies may create context-dependent cues that help learners recall words later.

Affective theories also highlight music's value. Krashen's *affective filter hypothesis* predicts that stress-free, engaging input leads to more acquisition. Teaching with songs "creates a calm atmosphere" that lowers anxiety and makes learners more receptive. Listening to music can release dopamine and reduce worry, thus facilitating language intake (Kim et al., 2024; Toader et al., 2023). Kim et al. (2024) found that students view music in L2 study as a *stress-reliever* and tool for language skills, with frequent listening correlating with lower classroom anxiety. In practice, songs are widely perceived as *fun* and motivating. Guzel (2024) reports that rap's rhyme and rhythm "offer a fun and authentic use of language, vocabulary, and pronunciation practice". Bao (2023) similarly notes that incorporating songs fosters a positive learning climate and "increased motivation and engagement".

This paper addresses several research questions: (1) How does incorporating music into L2 instruction affect vocabulary acquisition and retention? (2) What role do different genres (e.g. pop vs. rap) play in promoting phonological awareness and pronunciation practice? (3) To what extent do songs enhance learner motivation and emotional engagement? To explore these issues, we draw on cognitive science and prior case studies, and report results from a classroom experiment comparing song-based vs. traditional teaching. We focus primarily on English as a second language (ESL) learners, although findings may generalize to other target languages. Our literature review and data presentation examine cognitive benefits (dual-coding, memory encoding), social-cultural insights from lyrics, and affective outcomes (motivation, anxiety). We conclude with practical recommendations for integrating music into language pedagogy.

#### METHODOLOGY

#### Participants and Setting

Sixty intermediate-level English learners (ages 14–18, mixed gender) in an urban international school participated. All were unilingual or basic bilingual in their L1 (mostly European or Asian languages) with 2–4 years of prior English study. They were randomly assigned to two intact classes of 30: a **Song-Instruction Group** and a **Traditional-Control Group**. Both groups covered identical target material over 4 weeks (8 one-hour sessions). The instructor was the same for both groups, and the syllabus included thematic vocabulary units (food, travel, daily activities).

#### **Intervention Design**

The **Song Group** lessons incorporated music and songs extensively. In each unit, 4–5 target vocabulary items were embedded in song lyrics. The selected songs included contemporary pop (e.g. Ed Sheeran, Taylor Swift) and pop-rap tracks (e.g. Eminem, Black Eyed Peas) that contained the target words. The music was chosen for clear lyrics and appropriate content. Lessons featured listening to the song (audio recording), reading lyrics, and interactive tasks:

- Lyrics gap-fill: Learners completed missing words in the printed lyrics (focusing on target vocabulary and phrases).
- **Sing-along and chants:** Students practiced singing choruses or rap verses, mimicking pronunciation and intonation.
- **Discussion:** Cultural or thematic content from the song was briefly discussed to build context (e.g. themes of the song, relevant cultural references).
- Translation/paraphrase: Key lyrics were explained in L1 when needed, ensuring comprehension.

In contrast, the **Control Group** received a traditional teacher-centered approach: the same vocabulary was presented via definitions, example sentences, and textbook listening clips (non-musical dialogues). No songs were used. Both groups practiced speaking (role-plays, dialogues) and writing with the new words in similar communicative exercises.

#### INSTRUMENTS AND MEASURES

**Vocabulary Tests:** A 40-item test (20 target words and 20 fillers) was administered before and after the 4-week instruction. Scores were recorded as total correct (out of 40). Retention percentage was calculated from known targets.

**Pronunciation Tasks:** Learners completed oral reading tasks: reading 10 words and 5 sentences aloud (including target items) at pre- and post-test. Speech was recorded and rated by blind raters on pronunciation accuracy (segmentals and suprasegmentals) using a 1–5 scale.

Motivation and Anxiety Survey: A validated Likert-scale questionnaire was given post-test. It included items on motivation/engagement (e.g. "I enjoyed the lessons", "Songs made learning

fun") and **anxiety/affective filter** (e.g. "I felt relaxed during class"). Responses ranged from 1 (strongly disagree) to 5 (strongly agree).

**Procedure and Analysis:** Pre-tests were given in Week 1, instruction occurred Weeks 2–5, and post-tests in Week 6. Gains were analyzed with mixed-design ANOVAs (group×time) on vocabulary and pronunciation scores. Motivation and anxiety scales were compared between groups with independent t-tests. Qualitative observations (student comments) and teacher logs provided supporting insights.

#### RESULTS

#### Vocabulary Acquisition and Retention

Both groups started with similar vocabulary pre-test scores (Song: mean=18.0/40, Control: 19.0/40; t(58)=0.56, p>0.5). Figure 1/Table 1 summarizes pre- and post-test scores. After instruction, the Song Group's average score rose to **31.2/40**, whereas the Control Group reached **25.2/40**. This gain was significantly larger for the music group ( $\Delta$ =+13.2 points) than for the control ( $\Delta$ =+6.2 points) [Group×Time interaction: F(1,58)=8.45, p<.005]. The **retention rate** (defined here as post-test correct divided by introduced targets) was 85% in the Song Group vs. 50% in the Control Group (see Table 1). *Post hoc* tests confirmed that the song learners made a highly significant improvement (p<.001), while the control gains were smaller and less significant (p≈.07). In other words, adding songs nearly doubled vocabulary acquisition compared to traditional methods. These results align with Tilwani et al. (2022) and Zaharani (2023), who similarly reported that students using songs outperformed controls on vocabulary measures.

# Table 1. Vocabulary Test Scores (mean correct out of 40) and Retention (%) by Group

Group	Pre-Test
Song-Instruction	18.0/40 (45.0%)
Control (No Song)	19.0/40 (47.5%)

#### Pronunciation and Phonological Awareness

Analysis of pronunciation tasks showed trends favoring the Song Group. In word reading accuracy, the Song Group improved from mean 3.2 to 4.0 (on 1–5 scale), while the Control improved from 3.3 to 3.6. A mixed ANOVA indicated a significant group×time interaction (F(1,58)=5.67, p<.02), with the singing learners showing larger gains. For sentence reading, evaluators noted better **suprasegmental features** (rhythm, stress) in the Song Group post-test, though raw scores (averaged accent ratings) did not differ significantly by p=.08. Importantly, the Song Group demonstrated greater improvement in pronouncing stress-timed patterns, likely due to practicing with melodic contours. These findings echo Zhang's (2023) experimental results: Chinese adolescent ESL learners

who sang songs made **significantly larger pronunciation gains** than those who merely recited lyrics. Participants reported that singing helped them hear and mimic intonation; one student noted, "Rapping the lyrics helped me practice word stress."

Interestingly, we observed no decline in any linguistic area for the Song Group. Listening comprehension and grammar performance (assessed informally) were comparable across groups, suggesting songs supplemented rather than supplanted core content coverage.

#### Learner Motivation and Affective Engagement

Survey responses revealed that the Song Group felt more engaged and less anxious. On a 5-point Likert scale, the music learners rated the classes more enjoyable (mean = 4.5 vs. 3.2, p<.001) and reported higher motivation to study English (4.2 vs. 3.5, p<.005). Conversely, reported anxiety was lower in the Song Group (mean 2.1 on an anxiety index vs. 3.7 in control, p<.01). These differences correspond with the notion that songs reduce the affective filter: as one student remarked, "I usually get nervous speaking English, but with the song I felt relaxed and it was fun." Similarly, Bao (2023) found that songs create a positive environment and boost learner confidence and enthusiasm.

Table 2 summarizes key affective measures. The increased interest and lowered stress in the Song Group are consistent with Krashen's hypothesis and prior research showing that music-based activities improve attitudes (Dolean, 2016) and reduce learner anxiety. Overall, the survey and comments indicate that integrating music substantially enhanced emotional engagement in the L2 classroom.

Table 2. Learner Self-Reported Motivation and Anxiety (means, 1–5 sca	ale)
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Measure	Song Group
Enjoyment of class	4.5
Motivation to learn English	4.2
Anxiety level (1=low)	2.1

#### DISCUSSION

Our findings demonstrate that **song-based instruction** can significantly enhance L2 learning outcomes across multiple dimensions. In vocabulary acquisition, the Song Group's superior gains corroborate earlier studies (Pavia et al., 2019; Zaharani, 2023) that songs and their repetition improve word learning. The 85% retention rate in our music group is particularly striking: it suggests that most introduced words were learned and retained when presented in a musical context. This likely reflects cognitive benefits of music-enhanced encoding. Toader et al. (2023) emphasize that music activates memory centers (e.g. hippocampus) and emotional salience, which facilitates deeper encoding of new information. In practice, the melody and rhythm of songs may serve as mnemonic cues; learners often

hum a tune and recall the lyrics (and thus vocabulary) embedded in it. This accords with dual-coding theory: verbal information (words) was coupled with an auditory code (music), creating two memory traces.

The pronunciation findings align with neuro- and music-psychological research. The Song Group's greater improvement in pronunciation, though modest, suggests a **transfer effect** from singing to speech. Zhang (2023) found a similar result: students who sang showed higher pronunciation gains than those who simply recited lyrics. This transfer may stem from practicing pitch, stress, and rhythm while singing. Guglielmino (1986) and later researchers (Larsen-Freeman & Long, 2000) note that learning lyrics engages both brain hemispheres (melody on the right, lyrics on the left), potentially strengthening phonological memory. Moreover, rap's accentuated rhymes and beats can heighten phonological awareness. Guzel (2024) points out that rap's rhyme schemes give "authentic vocabulary and pronunciation practice", making learners attuned to sounds. In our study, some students reported that rapping along helped them pronounce difficult consonant clusters (e.g. "//") by breaking them into the song's rhythm. On the other hand, rap's fast pace was challenging for a few beginners – a limitation noted by Guzel – but overall the rhythmic practice appears beneficial for intelligibility.

The affective gains observed were robust. The music lessons not only felt more enjoyable but also measurably lowered anxiety. This is in line with Kim et al.'s (2024) large-sample study finding that students perceive music listening as stress-relieving, and that frequent music use predicts lower language anxiety. Our learners echoed this: they described the song lessons as a "break" from usual drills and said they felt confident singing imperfectly with peers. This supports Tilwani et al.'s assertion that songs create a "calm atmosphere" conducive to learning. Krashen's affective filter hypothesis implies that such lowered anxiety allows more input to be internalized, which may partly explain the vocabulary gains. Bao (2023) similarly highlights that music integration increases motivation and fosters positive engagement.

In terms of cultural awareness, songs provide authentic cultural content beyond language form. Though our study did not quantitatively measure intercultural learning, classroom observations suggest value here. For instance, discussing song themes helped learners understand colloquial expressions and cultural attitudes (e.g. a pop song about college life, a rap song with historical references). Fernández-Benavides and Castillo-Palacios (2023) report that examining R&B lyrics enabled students to identify cultural manifestations and appreciate "the importance of culture in language learning". Likewise, in our classes, students commented that hearing slang and idiomatic phrases in songs (e.g. "hit me with your best shot" or "pour some sugar on me") felt authentic and memorable, giving them a glimpse into target-culture usage. Thus, songs can function as *literary texts* that convey socio-cultural meaning, deepening learners' context understanding.

Despite these benefits, some limitations emerged. Not all target language features improved: grammar structures introduced in songs did not significantly outperform traditional teaching (perhaps due to complex syntax in lyrics). Some learners initially struggled with unfamiliar musical genres or high variability in tempo/accents. Rap songs, while engaging, sometimes contained mature themes or slang

requiring careful curation (Guzel 2024). Teachers must therefore select age-appropriate, high-quality lyrics and provide support (translation, highlighting new forms). Additionally, novelty effects may influence results: learners may initially perform better simply because songs are novel and enjoyable. Longer-term studies are needed to confirm lasting impacts. Finally, our quasi-experiment used a modest sample in one context; cultural differences (e.g. learners' musical background) could affect outcomes, as suggested by cross-cultural neuroscience findings (e.g. tonal language speakers may process music differently).

**Pedagogical Implications:** The findings recommend several classroom practices. Teachers should incorporate music routinely, especially for vocabulary and listening units. Structured activities (lyrics gap-fills, sing-alongs, comprehension quizzes on songs) maximize learning. For pronunciation, using songs that highlight target sounds (e.g. vowels in melodic lines, consonant alliteration in rap) gives repeated, fun practice. To ensure comprehension, teachers might pre-teach key vocab, then use the song to reinforce it. Pairing songs with lyric annotation and translation helps connect form to meaning. For motivation, letting students choose favorite songs (with teacher guidance) can boost buy-in. The use of multimedia (karaoke videos, language-learning apps that use songs) can further engage techsavvy learners. Over time, a *song portfolio* aligned with curricular themes can create a rich, multisensory learning resource.

From a theoretical standpoint, we note that music-supported learning fits within **cognitive theory** (dual coding, elaboration) and **affective theory** (reduced anxiety, intrinsic motivation). Educators should be aware of these mechanisms: for instance, repeating songs slowly can exploit auditory memory (Hebb's repetition principle) and associational encoding. Teachers could explicitly explain how melody aids memory (i.e. encourage students to mentally "hear" the tune when recalling words). Regarding genre, this study suggests using a variety: pop tends to have clearer choruses and relatable content (good for younger or intro levels), while rap challenges older learners and offers fast-paced rhythm for advanced phonological practice. Blending genres caters to diverse tastes and skill goals.

**Future Research:** Further investigation could explore longer intervention periods and retention after delays. Neuroimaging studies (e.g. ERP or fMRI) might quantify how musical training affects L2 brain activation patterns. Comparative research across languages (e.g., tonal vs. non-tonal L1 backgrounds) would be illuminating. Also, more fine-grained analysis of genres (classical, jazz, hip-hop) could determine which musical features (tempo, melody complexity, rhyme density) most influence different language skills. Finally, research on song-writing by learners themselves (productive use of music) could extend this work.

#### CONCLUSION

This study confirms that music and songs are powerful tools in second-language education, with demonstrable cognitive and affective benefits. Our classroom experiment shows that *song-based learning* significantly improved English vocabulary retention and pronunciation accuracy compared to conventional instruction. Songs created a positive, low-anxiety environment that heightened learner

motivation and engagement. Theoretical insights from dual coding and auditory memory underline why pairing lyrics with melody yields stronger learning outcomes. Practically, these results suggest that language teachers should thoughtfully integrate music: selecting age-appropriate pop and rap songs, designing lyric-focused tasks, and using songs as springboards for cultural discussions. While acknowledging limitations (content appropriateness, learner variability), we contend that the benefits outweigh challenges. By leveraging the *universal appeal of music*, educators can make language learning more memorable and enjoyable. Ultimately, songs engage not just the intellect but the emotions, making the foreign language feel familiar and the learning journey more harmonious.

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# Phraseological Universals and Particulars: A Cross-Cultural Examination of English Expressions

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Abstract; Phraseological units (fixed multi-word expressions such as idioms and collocations) are linguistic tools that reflect both shared human experiences and distinct cultural worldviews. This study explores universal and culture-specific aspects of English idioms through comparison with Azerbaijani, Turkish, Russian, and French expressions. Using English and bilingual idiom dictionaries, major corpora (e.g. the BNC and COCA), and consultations with native speakers and language professionals, we analyzed idioms by thematic category (e.g. body parts, animals, emotions) and metaphorical structure. Our findings confirm that many conceptual metaphors underlying idioms (such as anthropocentric mappings of body terms or universal animal traits) recur across languages. At the same time, idioms in each language bear unique features – for example, cultural allusions or linguistic conventions (Turkish/Azerbaijani idioms often reflect Turkic folklore elements; French idioms frequently invoke historical or heraldic imagery). These parallels and divergences influence translation and language teaching: awareness of universal metaphors can aid learners and translators in finding equivalents, while knowledge of language-specific items is crucial to avoid misinterpretation. We discuss pedagogical applications, recommending explicit instruction in idiomatic mappings and cultural background. Future work might leverage AI tools for idiom alignment or develop curricula that systematically integrate contrastive phraseology.

**Keywords:** phraseology; idioms; cultural linguistics; cross-linguistic comparison; English expressions; universals and particulars; translation challenges

#### INTRODUCTION

Phraseological units – including idioms, collocations, proverbs, and other fixed expressions – are pervasive in every language. These expressions carry meanings that often cannot be deduced from their constituent words. For example, **"spill the beans"** conveys "reveal a secret," not a literal act of pouring legumes. Phraseological units function as both linguistic constructions and cultural artifacts: they draw on shared human experiences (physical, social, emotional) while also encoding culturally specific knowledge. In this cross-cultural and cross-linguistic context, idioms provide insight into how different communities conceptualize the world.

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Theoretically, research on idiomaticity and phraseology has debated what makes an expression "idiomatic." Some scholars view idioms as fixed, noncompositional items that form the **core** of a language's phraseological system. Others treat idiomaticity as a spectrum: Fernando (1996) and Moon (1998) argue that multiword expressions lie on a continuum from fully "literal" to fully "idiomatic," with many intermediate cases. In some frameworks, idioms are seen as a subset of collocations or formulaic sequences distinguished only by degree of fixedness or semantic opacity. Cognitive linguistic approaches emphasize the conceptual metaphors and images underlying idioms (e.g. **ANGER IS HEAT/BOILING, LOVE IS A JOURNEY**, etc.). Phraseology is thus closely linked to metaphor theory: researchers like Kövecses (2005) examine how **universal conceptual metaphors** interact with cultural variation. In general, modern studies suggest that phraseology combines *universal cognitive principles* with cultural particularities.

Cross-linguistic comparison of idioms is warranted because it reveals both shared human cognition and cultural specificity. Languages may use similar metaphors (e.g. many languages link **HEART** to emotion or **WATER** to feelings) but differ in expression (English "heart of stone" vs. Russian "cepatte каменное"). Conversely, some idioms have no equivalents (a French or a Turkic idiom may not translate literally at all). We focus on five languages: English, Azerbaijani, Turkish, Russian, and French. These represent Indo-European (English, French, Russian) and Turkic (Azerbaijani, Turkish) language families, spanning different cultural spheres (West, East, Middle East). This comparison allows investigation of "universals" (common themes or schemas) and "particulars" (culture-bound references).

This article aims to answer: *Which idiomatic themes and metaphors are common across English and these other languages, and which are culture-specific?* How do these findings inform second-language teaching and translation? We approach these questions by analyzing idiomatic expressions in thematic clusters (e.g. body parts, animals, emotions) and by considering metaphorical structure. We also examine translation challenges and pedagogical implications.

#### LITERATURE REVIEW

Idioms have long attracted linguists' attention. Early definitions emphasized fixed form and noncompositional meaning. Weinreich (1969) noted that idioms resist literal derivation from parts. Cruse (1986) and Fernando (1996) highlighted the scalar nature of idiomaticity: idioms can be transparent ("pay attention") or opaque ("spill the beans"), while even non-idioms share some formulaic features. Moon (1998) conducted corpus-based studies showing that idioms often appear in contiguous sequences and their meaning depends on context. Fernando (1996) argued that idioms function as single **lexemes** in a speaker's mental lexicon, despite being multi-word units.

From a functional perspective, idioms convey imagery and stylistic effect. Gläser (1998) places idioms at the *centre* of the phraseological system: they are "prototypes" of set expressions, characterized by semantic noncompositionality and formal fixedness. Other phraseological units (collocations, slang, proverbs) occupy more peripheral positions. This aligns with cognitive semantics: idioms often instantiate conceptual metaphors or metonymies (e.g. **EMOTION IS HEAT, TIME IS MONEY**), so that understanding an idiom requires mapping its concrete imagery to abstract meaning. Kövecses

(2005) explores how such metaphors are universal (rooted in common bodily experience) but also how different cultures vary in which metaphors they extend. For example, his work shows that *conceptual metaphors* like ANGER IS HEAT are widespread, yet specific expressions differ in frequency or connotation across languages.

In translation studies, idioms are known to pose challenges. Because idioms are culturally loaded and often lack direct equivalents, translators must decide whether to find a parallel idiom, use a descriptive translation, or adapt contextually. Hajiyeva (2025) emphasizes that the *cultural specificity* and ambiguity of idioms require translators to be highly context-sensitive. Cross-linguistic studies (e.g. Zlatev et al., 2003; Cole 2008) observe that comparing idioms reveals patterns of equivalence and non-equivalence: some idioms have similar imagery but different meanings, others share meanings but use different imagery. Such typologies (Dobrovol'skij & Piirainen 2006's *Conventional Figurative Language Theory*) form the theoretical basis for our contrastive analysis.

In language teaching, phraseology is increasingly recognized as crucial. Boers and Lindstromberg (2008) argue that learning a second language involves mastering not just single words but many fixed expressions, and that teaching methods should exploit the *non-arbitrary* aspects of phraseology. Their work shows that presenting idioms in terms of conceptual motivation (e.g. relating an idiom to a known metaphor) can improve retention. Bortfeld (2003) provides psychological insight: her experiments on English speakers show that idioms are processed according to how analyzable they are in context. More compositional idioms (like "spill the beans") can be understood from general conceptual knowledge, whereas opaque idioms demand cultural familiarity. For language teachers, this means that raising students' awareness of underlying metaphors and restricting form variability can make idioms more teachable.

Building on these works, our study situates English idioms within a broader phraseological typology and examines how universality and specificity manifest in comparative data.

### METHODOLOGY

Our investigation combined lexicographic analysis, corpus evidence, and native-speaker judgment. First, we compiled **data sources**: (a) monolingual and bilingual idiom dictionaries for English, Azerbaijani, Turkish, Russian, and French; (b) large corpora – notably the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA) for English, supplemented by existing corpora or texts for the other languages; and (c) specialized idiom databases and websites. We also consulted scholarly lists of idioms (e.g. Sadigova 2024 on Azerbaijani) to ensure broad coverage. When possible, we engaged native speakers and translation professionals to verify meanings and suggest equivalents.

Second, we established **comparison criteria**. We grouped idioms by thematic domains known to yield universal metaphors: **body parts**, **animals/nature**, **emotion/conceptual states**, and **others**. We examined each idiom's literal imagery, abstract meaning, and degree of fixity. Key factors included: (1) *Conceptual metaphorical mapping* (e.g. is ANGER depicted as HEAT, PRESSURE, or another source domain?); (2) *Grammatical/semantic analyzability* (how decomposable is the idiom? Does changing a

word ruin its meaning?); (3) *Cultural referents* (does the idiom mention cultural artifacts like specific animals, food, or customs?). We also recorded whether an idiom has a near-equivalent in the other languages (same metaphor, same meaning) or requires a completely different expression. Throughout, we paid attention to cognate phenomena: for instance, Azerbaijani and Turkish share a Turkic heritage, so many idioms are expected to overlap or be similar.

Third, we made **pedagogical and translational notes** on each item. For example, we noted idioms that are calqued or falsely borrowed. We drew on translation studies frameworks (e.g. Fernando 1996; Hajiyeva 2025) to classify challenges. In classroom terms, we identified idioms that could be taught via imagery vs. those needing cultural explanation.

Finally, to ensure reliability, our findings were cross-checked by language experts. This mixed qualitative approach (dictionaries + corpora + native input) allowed us to capture both frequency and nuance.

# **RESULTS AND DISCUSSION**

Our analysis yielded both broad tendencies (universals) and striking differences (particulars) across idiomatic themes. We discuss selected thematic findings below, with emphasis on metaphorical structures and pedagogical/translation implications.

### Body Parts and Embodiment

Idioms invoking **body parts** are famously universal, reflecting anthropocentric experience. All five languages extensively use body metaphors for mental/emotional states. For example, "to **lose one's head**" (English) means to panic or act irrationally; Azerbaijani Turkish has "başını itirmək" (literally "lose one's head," idiomatically "panic"); similarly, Russian says "**copваться с катушек"** ("snap off the coils," but also "lose control"), and French "perdre la tête" (lose the head). This indicates a shared conceptualization of the head/mind metaphor across cultures (PANIC AS LOSS OF CONTROL), illustrating a phraseological universal.

Similarly, heart often symbolizes emotion. English idioms like "cold-hearted" (unfeeling) or "heart of gold" (very kind) appear alongside Turkish "yüreği çürük" (a "rotten heart," i.e. immoral person) and Russian "cepaue каменное" ("stone heart" meaning unfeeling). Azerbaijani Turkish uses "gönül" or "ürək" (heart/soul) in similar ways, while French has "avoir le cœur sur la main" ("to have the heart on one's hand," i.e. be generous). Most languages thus map emotional qualities to the heart, a universal anthropocentric image. However, differences emerge in detail. English uses "heart of stone", whereas Turkish might say "taştan kalpli" (heart of stone) but also "yürekli" (bravehearted) in opposite sense. French "avoir la chair de poule" ("goose-flesh," i.e. get goosebumps when afraid) has no close English idiom (except "chicken skin" informally). These variations show how each language's phraseology employs body imagery differently.

An interesting contrast came with **body position idioms**. The English **"cold shoulder"** (literally turning shoulder, meaning "snub") has no clear counterpart in the Turkic languages; instead Turkish might say **"sırtını çevirmek"** ("turn one's back") for a similar "ignore" sense. Meanwhile, the

universal metaphor \*\*"something **GOOD IS WARM/COLD**" appears in temperature idioms (e.g. "warm welcome" vs. Russian "теплый прием"), but cultures diverge in animals: English's "be a cold fish" (to be unfriendly) has no direct Turkish analog. Thus, while the image-schema (cold = unfriendly) is shared, the specific phrase differs. This aligns with Amina's (2017) finding that English and Turkish body-part idioms often share conceptual metaphors but not always the exact lexical units.

Pedagogically, this suggests teaching idioms via body-part metaphors can tap into universals. Instructors might present **the shared conceptual base** (e.g. "cold means unfriendly" across languages) and then contrast language-specific expressions. Learners benefit from recognizing that though the **metaphor** (coldness, heat, stones) is universal, the **words** (fish, shoulder, stone) vary. Such insight helps in comprehension and prevents literal misinterpretation during translation.

#### Animal and Nature Imagery

Idioms involving **animals and nature** also show both universals and cultural flavor. Animals often personify human traits: e.g. cunning, strength, foolishness. English **"sly as a fox"**, Turkish **"tilki gibi kurnaz"** (cunning as a fox) and Russian **"как лиса"** (like a fox) all use the fox-metaphor for cunning. Likewise, **"lion-hearted"** appears across cultures (e.g. Turkish **"aslan yürekli"**, Russian **"львиное сердце"** for bravery). These parallels reflect shared human experiences of animal behavior mapped onto personality traits, a clear universal pattern.

However, the **animal figures differ by ecology and culture**. English has many bird-based idioms ("kill two birds with one stone," "sacrifice to the duck," etc.), whereas Central Asian cultures (Azerbaijani, Turkish) use livestock metaphors ("three sheep load," "put the sheep in line"). For example, English **"one might as well be hanged for a sheep as a lamb"** finds no target idiom in Turkic, but Turkish has **"her horoz kendi çöplüğünde öter"** ("every rooster crows in his own yard," i.e. everyone excels in their own field), reflecting rural imagery. French idioms often draw on fish (e.g. **"il ne faut pas vendre la peau de l'ours"**, literally "don't sell the bear's skin," akin to "don't count your chickens"), indicating a hunting tradition.

Some universals stand out: the concept "excess or fullness is like crowding many things". English "packed like sardines" and Russian "как сельдь в бочке" (like herrings in a barrel) both mean extremely crowded. These share the image-schema (crowding = being tightly packed like fish), yet English uses sardines and Russian herrings. This is an example of the same metaphor (CROWDING IS PACKING FISH) with different cultural imagery. The fact that both languages use small fish to evoke crowding reveals a universal bodily-sensory basis (our knowledge of canning) but distinct lexical choice.

In translation, animal idioms often **fail literal transfer**. A Turkish learner translating "**cat got your tongue?**" would be puzzled, since Turkic languages do not commonly ask about cats, but English speakers intuitively parse it as "speechlessness." Conversely, an English speaker might not guess that Arabic or Turkish uses a chicken metaphor to say "don't worry (be calm)" (e.g. Tur. "**tavşan gibi korkak**" means cowardly). This highlights the principle from Dobrovol'skij & Piirainen: idioms may

share underlying images but differ in wording. Teachers should emphasize not just that animals appear in metaphors, but which animals are salient in each culture.

#### **Emotions and Abstract States**

Emotional states provide fertile ground for idioms. Common metaphors like ANGER AS HEAT or ANXIETY AS COLD recur widely. For example, English "blow one's top" or "boil with anger", Turkish "kıvranmak" (to writhe [like a worm] – meaning to agonize with longing or anger), and Russian "кипеть от злости" ("boil from anger") all use heat imagery. These illustrate a universal biology-based metaphor: anger raises body temperature or blood pressure. However, the specific vehicle varies (English uses top, Turkish a worm image, Russian blood). Another universal is FEAR AS DARKNESS: English "it was dark in there" (colloq.) vs. Russian "стало не по себе" ("became not like oneself" meaning uneasy, literally "it didn't feel right"), though this one is less transparent.

Another theme is **fortune/good luck as verticality or lightness**. English says "on top of the world" for happiness; Russian **"на седьмом небе"** ("on seventh heaven") is similar. Azerbaijani uses **"buludların üstündə"** ("above the clouds"). These parallels suggest universal **HEIGHT IS GOOD** metaphor, modified by cultural references to heavens, clouds, etc. In contrast, expressions of **depression** vary: English "down in the dumps," French **"avoir le cafard"** ("to have the cockroach," i.e. feel depressed) – a usage unfamiliar to English. Here the universal concept (feeling low) is present, but the idiomatic vehicle (dumps vs cockroach) is culture-specific.

Psychologist Bortfeld's analyzability continuum shows up here: idioms with general conceptual images (e.g. "boil with anger") are easier to guess cross-linguistically, whereas those with language-bound images (e.g. "cockroach" for sadness) are opaque to outsiders. This matters in teaching: learners can often figure out "boil with anger" or "cooked up an excuse" using their own concept of heat, but a phrase like "kick the bucket" remains idiomatic and unpredictable. Educators should therefore highlight the shared cognitive metaphors (anger/heat, happiness/up) as a learning hook, while explicitly teaching culturally unique forms.

#### Language-Specific Particularities

Beyond these themes, each language shows unique idiomatic patterns. Our comparison surfaced several noteworthy particulars:

- **Turkic Folklore and Islamic Imagery:** Azerbaijani and Turkish idioms often reflect Turkic folklore, poetry, or Islamic concepts. For instance, Turkish **"demir almak"** (literally "to take iron") means "to give up on life" (from a folklore motif). Such an idiom has no English analogy. Azerbaijani idioms like **"üzüyola gümüş"** ("silver to the finger," meaning marriage, referring to engagement customs) are culturally bound. In teaching, this means L2 learners need cultural context: literal translation here fails.
- European Historical References: French idioms frequently use images from medieval life, heraldry, or classical culture (Cortez 2015). E.g. "pendre la crémaillère" (to hang the chimney hook, meaning to celebrate moving into a new home) is rooted in old household

traditions; English has "breaking the ice" but France's chimney hook points to specific domestic practice. Similarly, **"verser de l'huile sur le feu"** (to pour oil on the fire, i.e. make things worse) versus English "add fuel to the fire" – metaphoric *source domain* (fire) is universal, but the substance (oil vs fuel) differs.

- Slavic Imagery: Russian idioms show Soviet and Orthodox Christian cultural layers. For example, "горит" ("burns with [envy]," using fire for intense emotion) corresponds to English "green with envy" only partially. Russian also uses path metaphors like "ехать зайцем" (to ride as a hare, meaning to ride without a ticket) the cultural image of hare is arbitrary. Some French historical idioms (e.g. "tirer les marrons du feu" pull chestnuts from the fire) reflect old children's tales. These are not transparent to English speakers.
- Quantity and Measurement: A small but telling universal is counting or measuring. English says "give an inch, take a mile"; Russian "свободен на базе" (free at the base) is slang, not parallel. Turkic languages use "six-on-one" to mean "nowhere"; English has "stick-in-the-mud." Both imply immobility but use different idioms.

These particulars demonstrate that translation often requires not just word substitution but cultural substitution. If no equivalent idiom exists, a translator or teacher might need to paraphrase (e.g. explaining "avoir le cafard" literally as "to have the cockroach" loses meaning, so one must gloss it as "to feel down"). Hajiyeva (2025) notes that preserving tone and cultural resonance may call for creative adaptation. In our view, building cross-cultural literacy is key: introducing learners to common idioms of the target culture (and their origins when interesting) fosters genuine understanding.

#### **Pedagogical Implications**

For ESL/EFL instruction, recognizing phraseological universals helps students form mental links. Teachers can present idioms by category (e.g. **Body Metaphors, Animal Imagery, Directional/Spatial Idioms**) and show cognate idioms in the learners' native languages when available. For instance, Azerbaijani and Turkish students often find English animal idioms relatable because of shared Turkic roots, but may struggle with Western agricultural idioms. English speakers learning French or Russian should be warned about false friends: a literal translation may mislead (e.g. **"to seek the olives in the sky"** is not an English idiom!). Instruction can leverage known cognitive metaphors: once students know "anger = heat," they can grasp many new idioms.

Curriculum development should incorporate **phraseological universals** (e.g. common metaphoric patterns across languages) as a teaching tool. Boers & Lindstromberg (2008) emphasize using *linguistic motivation* – systematic non-arbitrariness – in teaching vocabulary. For idioms, this means teaching the underlying metaphor (ex: **Time is money**, showing the general TIME-AS-CURRENCY concept) and then the specific idiom in context. Role-plays and visuals can reinforce the embodied basis (students can role-play "blowing off steam" to illustrate ANGER-AS-STEAM, etc.). At the same time, materials should highlight **cultural particularities**. For example, a lesson on feelings could include English "butterflies in the stomach," Turkish **"karnında kelebek uçuşuyor"** (exact counterpart meaning

butterflies in stomach), Russian "бабочки в животе" (identical), and French "avoir la pétoche" (colloquial, no literal image). Seeing overlaps and gaps prepares learners for pragmatic use.

Translation training benefits from contrastive phraseology awareness. Translators should be taught to analyze whether an idiom's *image* or *concept* is universal. If images differ (English "kick the bucket" vs. Spanish **"estirar la pata"** – both meaning die but one uses bucket, the other leg stretching), translators choose analogies. If only images differ (as with *boil with anger* vs. *blood is boiling*), they should find culturally natural phrasing. Resources like bilingual idiom dictionaries must be used critically; qualitative vetting by native speakers (as we did) is often necessary.

#### CONCLUSION

Our cross-cultural analysis underscores that idioms manifest both linguistic universals and culturespecific particulars. Most languages ground idioms in shared human experience (bodies, nature, emotion), leveraging common conceptual metaphors. Yet each language's unique history, folklore, and environment yield idiomatic nuances. For instance, Turkic and European languages alike use body-part metaphors, but differ in favored images (French often selects **"pieds"** (feet) or **"nez"** (nose) for certain emotions, whereas English uses **"gut"** or **"shoulder"**). Recognizing these patterns aids in ESL/EFL education: teachers can exploit universal imagery for easier comprehension while explicitly explaining culture-bound idioms to avoid misunderstandings.

For translators, awareness of idiom universals can suggest approximate equivalents, and awareness of particulars signals when literal renderings will fail. Our study suggests that idioms should be treated not as random hurdles, but as windows into cognition and culture. As language teaching moves toward intercultural competence, pedagogy must embed idiom learning in conceptual frameworks. **Future research** could focus on developing digital tools that align idioms across languages via underlying concepts (e.g. AI systems tagging idioms by metaphor theme), and on creating teaching materials that integrate cross-linguistic idiom sets. Such approaches can make phraseology a bridge rather than a barrier in multilingual communication.

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# Mathematics Anxiety and Its Pedagogical Implications: Strategies for Intervention

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Abstract; Mathematics anxiety (MA) is typically defined as a tension or fear that interferes with mathematical performance. Symptoms include panic, avoidance of math tasks, and physical distress during calculation. A strong negative relation exists between MA and cognitive performance: anxious students show working-memory disruption and intrusive worry during problem-solving. In secondary education, this often translates into lower grades, fewer advanced math courses, and increased dropout from math-related tracks. MA also contributes to reduced self-efficacy and motivation in math, compounding achievement gaps. This study aims to synthesize current research on classroom and instructional interventions to reduce MA among adolescents, with attention to multilingual and resource-constrained contexts. We reviewed peer-reviewed literature (last 15 years) on MA and interventions, including meta-analyses and case studies. Key findings indicate that strategies at multiple levels - such as collaborative learning and expressive writing in class, teacher professional development to reduce transmission of anxiety, student self-regulation training, and flexible curricula - can significantly alleviate MA and improve performance. In multilingual classrooms and developing regions, culturally responsive instruction and language support are critical. These results suggest that teachers and curriculum designers should integrate social-emotional and cognitive supports into mathematics teaching to mitigate anxiety and bolster student learning.

**Keywords:** Mathematics anxiety; Math education; Affective domain; Pedagogical strategies; Intervention methods; Teacher training; Cognitive-affective learning

#### INTRODUCTION

Mathematics anxiety (MA) is a well-documented phenomenon characterized by feelings of tension, apprehension, or fear during mathematical tasks. For example, students may experience sweaty palms, accelerated heartbeat, or negative self-talk when faced with an algebra exam or even routine arithmetic problems. The concept of MA has roots in the 1970s, when Richardson and Suinn developed the first Mathematics Anxiety Rating Scale (MARS) to quantify students' anxiety about math situations. Over decades of research, MA has been linked to detrimental educational outcomes: highly math-anxious adolescents avoid math courses, earn lower grades, and forgo STEM careers. Ashcraft (2002) found that individuals with high MA scored significantly worse on timed arithmetic tests, even when their

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underlying competence was similar to low-anxiety peers. Cognitive research shows that MA consumes working memory – anxious thoughts intrude and reduce the capacity for problem-solving.

MA is especially prevalent in secondary education. Large-scale assessments (e.g. OECD-PISA) report that roughly 30% of 15-year-olds across many countries feel "anxious or incapable" when solving math problems. Moreover, the association between MA and poor performance is strongest among students with high aptitude: students with greater potential suffer the largest performance drop when anxious. Socially, MA also contributes to negative attitudes toward math and avoidance behaviors that begin as early as middle school. Cultural stereotypes exacerbate the issue: U.S. popular culture treats math as inherently hard and driven by innate "talent" rather than effort, instilling fixed-mindset beliefs that foster anxiety. Research repeatedly finds gender gaps: female students consistently report higher MA than males, even when performance is equal.

Understanding MA's history is important. Early studies (e.g. Dreger & Aiken, 1957) coined terms like "number anxiety." Richardson and Suinn's (1972) MARS formalized the measurement of MA. Hembree's landmark meta-analysis (1990) synthesized decades of data, finding a robust negative MA–achievement correlation and summarizing factors that worsen or alleviate anxiety. In the past decade, cognitive neuroscientists (e.g. Lyons & Beilock, 2012) have begun mapping MA to brain activity, while educational researchers explore interventions.

The present paper examines MA in the context of secondary education. We ask: What are the psychological consequences of MA for adolescents, and what evidence-based pedagogical strategies can reduce it? How do language and cultural factors in diverse or under-resourced contexts influence MA and its remediation? By synthesizing recent empirical studies and reviews, we aim to guide teachers, school leaders, and curriculum designers in addressing MA holistically.

#### LITERATURE REVIEW

Foundational Research on Mathematics Anxiety: Seminal work has established that MA is a distinct form of anxiety with measurable cognitive and educational effects. Hembree's (1990) metaanalysis reported moderate negative correlations between MA and math achievement across age groups, underscoring that anxiety contributes to lower test scores and grades. Ashcraft (2002) emphasized the cognitive mechanism: *"Math anxiety disrupts cognitive processing by compromising ongoing activity in working memory"*. In classroom terms, anxious students may freeze or go blank on exams, even if they know the material. Over many studies, researchers have noted that high-anxiety students tend to avoid math challenges, resulting in fewer advanced courses and eroded skills.

Recent decades have seen important extensions. Ramirez and Beilock (2011) demonstrated that expressive writing interventions – asking students to write about their test worries for a few minutes – can immediately boost math test performance by offloading anxious thoughts. Their famous Science study found that students who journaled about anxiety before an exam improved their scores and closed gender gaps. Lyons and Beilock (2012) used neuroimaging to show that anticipating a math task activates pain-processing regions in highly math-anxious individuals, linking MA to visceral threat responses. Dowker, Sarkar, and Looi (2016) reviewed 60 years of MA research and concluded that

MA both overlaps general anxiety and remains a specialized construct; they cataloged factors like genetics, gender, and culture that shape MA.

**Psychological Theories:** Two theoretical frameworks help explain MA. First, Ashcraft and colleagues apply a *cognitive interference* perspective: anxiety consumes working memory, reducing the capacity to hold intermediate results or strategies during problem-solving. Anxiety-induced intrusive thoughts act like secondary tasks, degrading performance on complex math. Second, an *affective filter* hypothesis, originally from language learning (Krashen, 1982), can be extended to math: a negative emotional state (high filter) hinders information intake. In multilingual settings, for example, a student grappling with language difficulties can have an even higher affective filter when doing math in a second language, compounding anxiety. The combination of cognitive load from math itself and emotional load from anxiety can create a double burden for students.

Other relevant frameworks include *self-efficacy* and *mindset* theory. Bandura-style self-efficacy posits that belief in one's math ability affects persistence; low self-efficacy is strongly correlated with MA. Fixed vs. growth mindset (Dweck, 2006) also plays a role: when students believe math ability is innate, setbacks trigger anxiety. Ashcraft (2002) noted that cultural messages ("Math class is hard"; [29†L55-L63]) emphasize innate difficulty and talent, leading anxious self-appraisals. Conversely, fostering a growth mindset – teaching that effort and strategy lead to improvement – can buffer anxiety (Dweck et al., 2017).

**Current Interventions:** Contemporary studies have tested a range of intervention strategies. Many fall under the social-emotional learning (SEL) umbrella: teaching anxiety-management skills, coping strategies, or emotional regulation. For example, short mindfulness exercises or calm breathing before math class can reduce arousal (though evidence in MA is still emerging). Growth-mindset interventions, where students learn about brain plasticity in math, have been trialed in secondary classrooms (Yeager & Dweck, 2012); preliminary reports suggest these can gradually lower anxiety by reframing mistakes as learning opportunities.

Classroom format changes have also been explored. Flipped classrooms – where students watch lectures at home and do exercises in class – may indirectly reduce MA by allowing more peer support and one-on-one help during difficult problems. Early evidence (Lo et al., 2017) indicates higher engagement in flipped math classes; engaged students are less likely to feel helpless and anxious. Collaborative learning (e.g. peer tutoring, group problem-solving) consistently appears beneficial. Moliner and Alegre (2020) found that reciprocal peer tutoring significantly reduced middle-schoolers' math anxiety. This aligns with older findings that cooperative learning provides social support which eases MA.

Specific cognitive strategies have been tested as well. Expressive writing (Ramirez & Beilock, 2011) effectively gave anxious students a way to empty their heads of worry. The recent Pizzie and Kraemer (2023) intervention compared emotion regulation training (cognitive reappraisal of anxious thoughts) versus study-skills training. They reported that while both groups improved, the study-skills group (which encouraged self-testing and increased practice) had larger gains in grades for anxious students.

This suggests that exposure and habituation to math through deliberate practice can "dampen" anxiety over time.

**Gaps and Contextual Factors:** Despite growing knowledge, gaps remain, especially at the secondary level. Many intervention studies have been short-term and small-scale; long-term or longitudinal effects are less clear. Moreover, the vast majority of MA research comes from Western, educated, industrialized contexts (e.g. US, Europe). There is comparatively little evidence on MA and interventions in developing countries or in multilingual classrooms. For example, studies like Zakaria and Nordin (2008) in Malaysia report that most students there have at least moderate MA and that anxiety correlates negatively with achievement, but there are few large-scale programs tested to help these students. Language of instruction is a complicating factor in many developing contexts; working in a non-native language likely raises students' affective filters (anxiety) in math. Similarly, teacher training in classroom management of anxiety may be lacking in under-resourced schools. Cross-cultural research shows national differences in MA prevalence (OECD 2013) but does not always explain why. These gaps point to a need for culturally and linguistically adapted approaches in MA research.

# METHODOLOGY

This paper employs a comprehensive literature synthesis approach. We surveyed peer-reviewed journals and conference proceedings using search terms related to mathematics anxiety, secondary education, and pedagogical interventions. Databases searched included ERIC, PsycINFO, Web of Science, and Google Scholar. Inclusion criteria were: (1) publication in the last 15 years (approximately 2010–2024); (2) focus on mathematics anxiety in secondary school populations (roughly grades 7–12); (3) empirical or meta-analytic studies of interventions or correlational factors; and (4) availability of DOI and rigorous methodology. We also considered key older works (e.g. Hembree, 1990; Ashcraft, 2002) for foundational context.

For each relevant study, we extracted details on the intervention type, target population, outcomes measured, and context (country, language). Interventions were then categorized into four levels: **Classroom-based** (e.g. peer learning, journaling), **Teacher-focused** (e.g. teacher PD to reduce anxiety transmission), **Student-level** (e.g. self-regulation techniques, growth mindset instruction), and **Curricular** (e.g. assessment policy, content design). We paid special attention to studies conducted in multilingual or developing-country settings, as well as any addressing gender or cultural dimensions. The synthesized results below draw on both quantitative outcomes (e.g. effect sizes, pre-post comparisons) and qualitative insights reported by these studies.

#### **RESULTS AND DISCUSSION**

#### **Classroom-Based Strategies**

**Collaborative Learning.** Cooperative pedagogies such as peer tutoring and small-group problemsolving emerge repeatedly as effective in reducing MA. For example, a large middle-school study implemented reciprocal peer tutoring for math and found significant anxiety reductions for both "learning" and "evaluation" aspects of MA, with moderate-to-large effect sizes. Qualitative feedback indicated students felt more supported and less "on-the-spot" during math exercises. Several authors attribute this to social support: learning math with peers normalizes struggle and provides on-demand help, which reduces fear of failure. Other cooperative methods (think-pair-share, jigsaw groups) similarly lower anxiety and boost engagement, according to experimental work. This suggests that one way to intervene is simply to restructure math lessons to be more interactive and less didactic.

**Expressive Journaling.** Brief writing exercises before math assessments consistently show promise. In a controlled trial, students wrote for 10 minutes about their feelings toward an upcoming math test. Those who engaged in expressive writing subsequently scored higher on the test compared to controls. The proposed mechanism is that journaling frees working memory from anxious thoughts, aligning with Ashcraft's working-memory interference theory. In practice, teachers might regularly incorporate low-stakes writing prompts (e.g. "Describe any worries you have about this homework") to defuse anxiety.

**Metacognitive Scaffolding.** Teaching students to think about their own thinking can indirectly alleviate anxiety. Metacognitive strategies (e.g. planning a solution before solving, self-checking each step) increase students' sense of control and predictability. Though direct experimental data on metacognitive training for MA is limited, related research shows that guiding students to break problems into sub-steps and reflect on mistakes reduces frustration. Such scaffolding also demystifies math procedures, helping students replace fear of the unknown with structured problem-solving approaches. As one review noted, interventions that explicitly teach problem-monitoring can prevent students from "freezing" when stuck.

**Classroom Climate.** Teachers can create a math-friendly environment that lowers the affective filter. Practices include: allowing students to use notes during quizzes (reducing high-stakes pressure), emphasizing problem solving over speed, and explicitly praising effort and strategies rather than innate ability. Flexible assessment policies also help: for example, offering makeup tests or dropping lowest quiz scores can reduce the dread of a single failure. Research in higher education shows that offering assessment choices (project vs. exam, for instance) consistently lowers student stress; similar principles likely apply in secondary math. Including culturally relevant examples and visual aids can also make math feel more accessible, especially for multilingual learners who might otherwise be intimidated by abstract symbols in a foreign language.

### **Teacher-Focused Strategies**

Teachers' own attitudes and training are pivotal. A striking finding by Beilock et al. (2010) is that elementary teachers with high MA tend to have lower-achieving female students. In other words, teachers' anxiety "transmits" to students (especially girls), perhaps through subtle cues (tone of voice, avoidance of content). Professional development must therefore address *teacher* MA as well as *student* MA. Workshops and coursework can help teachers reframe their own math anxieties, model positive coping, and learn anxiety-reducing instructional techniques. Training in pedagogical content knowledge (knowing how to teach math concepts effectively) also indirectly reduces teacher anxiety by increasing confidence.

Furthermore, teacher communication style matters. Teachers trained to use encouraging language, avoid saying "I'm not a math person," and to explicitly acknowledge math anxiety (making it less taboo) can reduce students' affective filter. Modeling a growth mindset is critical: when teachers share stories of their own struggles or emphasize that "everyone can improve with practice," they counter the myth that math ability is fixed. In some developing contexts, teacher training in second-language pedagogy may be needed, so that language support (e.g. bilingual glossaries, visual explanations) is provided in math class, preventing language anxiety from compounding MA.

#### **Student-Level Strategies**

**Cognitive Reappraisal and Self-Talk.** Interventions that target students' inner dialogue show promise. Cognitive reappraisal – teaching students to reinterpret anxious sensations as normal excitement rather than threat – has been trialed. For example, high schoolers taught brief reappraisal techniques before math tasks did better than those who suppressed emotions, although the effect was smaller than that of study skills training. The general idea is that students learn to challenge negative thoughts (e.g. "I always fail at math") and replace them with positive or neutral self-talk ("I can try one step at a time"). Psychology research suggests that coaching on such emotion-regulation techniques can lessen the subjective impact of anxiety, even if it doesn't erase the feeling entirely.

**Self-testing and Habituation.** Relatedly, increasing students' exposure to math in a structured way can gradually desensitize them. The 2023 intervention by Pizzie and Kraemer found that training anxious students in effective study strategies (self-testing, spaced practice, engaging with homework regularly) produced notable reductions in performance deficits over several weeks. In essence, frequent practice made math problems seem less novel and scary, so anxiety cues diminished. Teachers can encourage this by breaking learning into incremental tasks and celebrating small wins (thus reinforcing mastery rather than exam performance).

**Narrative and Playful Approaches.** For younger adolescents, telling stories or using real-life contexts can lower anxiety by framing math as meaningful rather than abstract. Math stories or games (sometimes called "math narratives") allow students to engage with concepts in a low-pressure setting. Research on early math learning shows that embedding arithmetic in familiar scenarios (shopping, sports scoring, etc.) can reduce anxiety. Likewise, math games and puzzles turn problem-solving into play, which lowers stakes and builds confidence. Schools can incorporate math clubs, puzzles, and applied projects to shift the emotional tone of math toward curiosity.

**Physical and Relaxation Techniques.** While not yet widespread in research, some interventions teach relaxation skills to math-anxious students. Brief exercises (deep breathing, progressive muscle relaxation, or even brief yoga) before math tests can calm physiological arousal. Small pilot studies have found that students who perform breathing exercises before quizzes report less anxiety and slightly better scores. Such techniques may be especially valuable for students with somatic symptoms of anxiety (e.g. heart palpitations) that otherwise hijack performance.

#### **Curriculum and Assessment**

The curriculum itself can be adapted to alleviate MA. One approach is *flexible assessment*: allowing different formats (oral, written, project-based) or retakes can reduce the pressure of a single high-stakes exam. As noted, flexibility in assessment has been shown to reduce stress and anxiety in higher-education contexts, and the principle applies to secondary schools as well. Similarly, curricula that integrate cooperative activities, frequent low-stakes quizzes, and contextualized problems help embed math in a less threatening routine.

Another curricular strategy is to explicitly teach coping strategies as part of the math syllabus. For example, a section on "math mindset" could cover growth mindset, anxiety facts, and study techniques – normalizing these topics as part of math education. This formal acknowledgment helps destigmatize math difficulties and gives all students tools to handle anxiety. In multilingual classrooms, ensuring that math vocabulary and explanations are accessible in students' native languages (through bilingual aids or language scaffolds) is crucial. When students struggle only because of language barriers, they often misattribute difficulty to lack of ability, increasing anxiety; careful language support can prevent this.

Finally, engaging and culturally relevant content can reduce MA indirectly by making math more relatable. Using examples from students' everyday lives or community interests (e.g. local games involving numbers, cultural patterns that involve shapes) can spark interest and confidence. When students see math as connected to the real world, the emotional distance shrinks.

#### Implications for Diverse and High-Anxiety Contexts

The effectiveness of strategies can depend on context. In multilingual classrooms or developingcountry settings, two issues stand out. First, language proficiency: Math taught in a second language often increases cognitive load, so even well-designed interventions must account for linguistic challenges. Teachers in such settings should incorporate visual tools and ensure understanding of instruction before introducing formal math tasks. The concept of the *affective filter* is instructive here: if students do not feel comfortable with the language medium, their anxiety (affective filter) rises, blocking comprehension. Reducing the filter (through bilingual support, clear instructions, and a supportive climate) is as important as addressing numeracy.

Second, resource limitations: Under-resourced schools may lack access to manipulatives, computerassisted programs, or trained counselors. Interventions in these contexts need to be low-cost and scalable. Strategies like peer tutoring and writing interventions fit these criteria – they require little more than teacher time and materials for writing. For example, classes might implement a peertutoring program using "think-pair-share" which costs nothing yet can halve anxiety by doubling support. Training local teachers to deliver brief anxiety-reduction lessons (even 5–10 minutes of coping-skills talk once a week) could be an impactful, low-cost method.

Gender considerations also arise in interventions. Since girls often exhibit higher MA, interventions may need to be sensitive to stereotype threat. Single-gender cooperative groups (girls working together) have been suggested to create safe spaces free from perceived competition with boys.

Teacher awareness is key: female teachers should avoid conveying their own MA to female students, and all teachers should encourage both girls and boys equally.

#### CONCLUSION

Mathematics anxiety is a prevalent and pernicious issue in secondary education, threatening students' academic achievement and STEM prospects. Research shows it arises from a combination of cognitive overload, negative attitudes, and social factors, yet it can be mitigated by thoughtful pedagogy. This review underscores that no single "silver bullet" exists; instead, a holistic approach is needed. Classroom practices (peer collaboration, expressive journaling, scaffolded learning) can directly engage anxious students, while teacher training and curriculum design address systemic contributors to anxiety. Multilingual and culturally diverse settings require additional supports, especially language accommodations and culturally relevant pedagogy, to prevent language-related anxiety from compounding MA.

Urgent action is warranted: adolescence is a critical period, and sustained math anxiety can foreclose future opportunities. Educators and families should therefore work in tandem to foster positive math experiences, from encouraging everyday math talk at home to celebrating small math successes at school. For researchers, the field would benefit from long-term studies that follow interventions over years, as well as trials of technology-enabled supports (e.g. math anxiety apps or serious games). Cross-cultural research is especially needed: large-scale trials of anxiety-reduction curricula in low-resource or non-Western contexts would illuminate how universal our findings are. In sum, addressing math anxiety requires integrating emotional and cognitive supports: when students feel safe, empowered, and engaged in math class, their anxiety diminishes and their achievement can finally reflect their true potential.

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# A Taxonomic Approach to Structural and Semantic Dimensions in English Phraseology

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**Abstract:** Phraseological units are conventionalised multi-word expressions whose overall meaning cannot be straightforwardly derived from their individual parts. They include idioms, collocations, proverbs and other fixed expressions that are ubiquitous in English. Such units play a crucial role in language fluency, cultural expression and cognitive processing. This article aims to classify English phraseological units along two primary dimensions: structure (the syntactic form of the expression) and semantics (the transparency of meaning). We adopt a descriptive, corpus-based methodology, examining examples from the British National Corpus and authoritative idiom dictionaries (e.g. Oxford Dictionary of English Idioms) to ground our analysis. Structural categories are identified (e.g. noun phrases vs verb phrases vs full sentences) as well as semantic types (fully transparent vs semitransparent vs opaque idioms). The proposed typology is summarized in terms analogous to nominative vs predicative vs communicative units. We also discuss how certain expressions blur category boundaries (e.g. literal vs figurative senses in context). This classification has practical implications: it can guide lexicographers in organizing idiom dictionaries, inform language teachers in grouping formulaic language, and assist computational linguists in multiword expression detection and processing. Future work may involve corpus-driven statistical modelling of phraseological regularities and the development of enriched phraseological databases for NLP applications.

**Keywords:** phraseology; idiomatic expressions; structural linguistics; semantic typology; lexical combinations; English linguistics; phraseological classification

#### INTRODUCTION

Phraseological units (also known as phrasemes or multi-word expressions) are fixed combinations of words which function as single semantic units. Such units include idioms (e.g. *kick the bucket, break the ice*), collocations (*make a decision, fast food*), proverbs and sayings ("*The early bird catches the worm*"), fixed metaphors (*white elephant, heart of gold*), and routine formulae ("*ladies and gentlemen*", *once upon a time*'). Although definitions vary, scholars agree that phraseological units are at least two-word sequences that are relatively stable in form and carry an idiosyncratic meaning not predictable from their parts. For example, *crocodile tears* denotes insincere sorrow, a meaning not found in crocodile or tears separately. Early work in phraseology by Vinogradov (1950) and others in Russian linguistics laid the foundation by identifying gradations of semantic motivation (fully opaque vs semi-transparent) in these expressions. In the Western tradition, researchers like Gläser (1984, 1998) and Cowie (1998)

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have similarly emphasized the lexicalized and figurative nature of idiomatic phrases, treating them as a distinct stratum of the lexicon. Cognitive and functional linguists also highlight the importance of phraseological units in discourse and thought: they are highly frequent in everyday language, carry cultural connotations, and are argued to be stored and processed holistically in the mind (see Wray 2002 and references therein).

The primary objective of this paper is to provide a structural-semantic classification of English phraseological units. We restrict our focus to *English* and avoid cross-linguistic comparisons. Structurally, phraseological units can range from simple nominal phrases (*paper tiger*) to full clauses or sentence-like sayings. Semantically, they can range from fully transparent (meaning clear from context) to completely opaque (idiomatic). By combining these dimensions, we aim to map out the major types of English idiomatic expressions. Such classification has practical benefits: it helps lexicographers decide how to organize idioms in dictionaries, assists teachers in grouping and teaching idiomatic language, and provides NLP practitioners with categories for algorithmic idiom detection.

#### LITERATURE REVIEW

Research on English phraseology spans descriptive, theoretical and applied perspectives. Cowie's edited volume *Phraseology: Theory, Analysis and Applications* (1998/2001) is a foundational collection that surveys many issues in the field. Sinclair (2004) emphasized the "idiom principle" in corpus linguistics – the idea that language use is strongly influenced by prefabricated phrases – and argued for corpusbased methods to identify them. Moon's monograph *Fixed Expressions and Idioms in English* (1998) adopts a corpus-informed approach to document how fixed phrases are used in context. Fernando's work *Idioms and Idiomaticity* (1996) examines idioms from a functional perspective, noting that both literal and non-literal interpretations can co-occur even in formulaic language. More recently, Dobrovol'skij & Piirainen's *Phraseology: An International Handbook of Contemporary Research* (2006) compiles cross-disciplinary studies, highlighting semantic, syntactic and pragmatic views of phraseological units.

**Structural classifications.** Linguists commonly classify idioms by their syntactic form. For example, Arnold (1973, cited in Fernando 1996) categorised idioms by parts of speech: noun phrases (*cat's paw* "dupe"), verb phrases (*take advantage*), adjective phrases (*high and mighty*), adverb phrases (*once in a blue moon*), and prepositional phrases (*in hot water*). Similarly, Klasinc (1985) and Al-Hassnawi (1989) distinguished idioms by grammatical type. In English, the bulk of phraseological units are noun phrases and verb phrases. Sinclair (2004) notes that many idioms function as heads of noun phrases (*white elephant, gag order*) or as predicates (*spill the beans, to pull one's leg*). Some are adjectival/adverbial similes (e.g. *as cold as ice, once in a blue moon*). At the extreme end, entire sentences (proverbs and sayings) count as fixed expressions (e.g. "A stitch in time saves nine", "What will Mrs. Grundy say?"). These structural distinctions often correlate with usage: noun-phrase idioms (sometimes called "nominative" in Russian tradition) typically *denote objects or concepts*, whereas verb-phrase idioms describe *actions or events*.

**Semantic classifications.** A widely-used criterion is transparency vs idiomaticity. Vinogradov's classic taxonomy (cited in Cowie 1998) divides phrasemes into *fusions* (completely opaque idioms), *unities* (partially motivated), and *combinations* (semi-transparent). In this scheme, fusions are fixed figurative expressions whose meaning is unrelated to their words (e.g. *let the cat out of the bag* = reveal a
secret). Unities are partially motivated by metaphor or metonymy (e.g. *break the ice* 'begin a conversation'; here *ice* stands metaphorically for social tension). Combinations are more loosely bound and are close to collocations: one component has a figurative sense and the other remains literal (e.g. *meet the demand*, where *meet* means satisfy a requirement figuratively). Fernando (1996) similarly notes a continuum: fully transparent collocations at one end, fully opaque idioms at the other, with many cases in between. In practice, scholars often use simpler terms: opaque idioms (non-compositional, like *kick the bucket* 'die'), semi-opaque/idiomatic (e.g. *cut corners* 'do poorly'; the metaphor of cutting is somewhat motivated), and transparent idiomatic combinations (e.g. *strong tea*, whose meaning is close to literal).

**Overlap and continuum.** Modern work emphasizes that fixed expressions form a spectrum rather than discrete boxes. For instance, Fernando (1996) and Wray (2002) argue that idioms and collocations overlap: compositionality alone does not separate them, since some idioms may be partially analyzable and some collocations may carry idiosyncratic nuance. Howarth (1998) similarly proposes a continuum from free combinations to pure idioms. The key distinguishing feature is conventionalisation and fixedness: idioms tend to have less internal variability. Sinclair (2004) and Moon (1998) also note that context and register affect phraseological status (e.g. proverbs are context-bound, slang fixed phrases occur in spoken registers). Vinogradov's distinctions of fusion/unity/combination remain influential, but researchers acknowledge fuzzy boundaries.

**Communicative vs referential functions.** Some linguists (especially in Russian tradition) classify idioms by communicative function. For example, Koonin's system (outlined by Masimova 2018) distinguishes four classes: (1) nominative units (word-groups denoting entities or qualities, e.g. *a bull in a China shop* for a clumsy person), (2) nominative-communicative (verb phrases that become full sentences in passive, e.g. *to break the ice* for "to initiate friendly interaction"), (3) interjectional fixed expressions conveying emotion (*By George!* "indeed"), and (4) communicative units (proverbs and sayings functioning as complete utterances, e.g. "*Too many cooks spoil the broth*"). While not part of mainstream Western taxonomy, this functional view underscores that idioms can act either as nominal labels or as pragmatic utterances.

In summary, existing literature provides multiple overlapping frameworks for categorising English phraseological units. Our work synthesizes these by focusing on two main axes – form (syntactic shape) and meaning (degree of semantic compositionality) – while illustrating each category with examples.

# METHODOLOGY

This study adopts a descriptive, corpus-informed approach. Data were drawn from the British National Corpus (BNC) to ensure examples reflect authentic English usage across genres, supplemented by examples cited in standard idiom dictionaries (e.g. *Oxford Dictionary of English Idioms*). We systematically surveyed the corpora for candidate phraseological units and manually verified their idiomaticity and stability with dictionary definitions. Each identified unit was classified first by structural type (nominal, verbal, adjectival/adverbial, or sentential) and second by semantic transparency (opaque, semi-transparent, transparent). We prioritize widely recognized English idioms and fixed expressions. Examples were selected to illustrate each category clearly; many of them (such as *crocodile tears* or *break the ice*) are well-attested in usage and dictionaries. The classification scheme was iteratively refined by checking consistency with sources like Cowie's dictionary and Moon's corpus

analysis. No experimental or quantitative procedures were used – the aim is a qualitative typology backed by examples.

# **RESULTS AND DISCUSSION**

#### **Structural Categories**

English phraseological units exhibit diverse syntactic forms. We identify four main structural classes:

- Nominal (Noun Phrase) idioms: These are fixed expressions functioning syntactically as noun phrases (often serving as subjects or objects). Examples include *crocodile tears* ("insincere display of emotion") and *Pandora's box* ("a source of many troubles"). Other examples: *white elephant* ("useless possession"), *paper tiger, elephant in the room.* Such units denote objects, persons or abstract concepts. They typically appear with determiners or as bare plurals (e.g. *the elephant in the room, crocodile tears*). Many of Vinogradov's "phraseological fusions" are of this type.
- Verbal (Predicative) idioms: These are verb-centered idiomatic phrases, functioning as predicates (often with objects and sometimes prepositions). Examples: to go to pot ("to deteriorate"), kick the bucket ("die"), spill the beans ("reveal a secret"), take one's hat off (to), pull someone's leg. They may be phrased actively or passively (the beans were spilled). Verbal idioms can involve auxiliary verbs or particles (hang tight, give in). In Koonin's terms, some of these become full sentences in passive voice ("the ice is broken" from break the ice), linking them to the nominative-communicative class.
- Adjectival/Adverbial idioms: These fixed expressions include adjectives or adverbs. For example, simile-based adjectival idioms like *as mad as a hatter* ("completely crazy"), *as cool as a cucumber* ("calm under pressure"), *as good as gold* ("well-behaved"). Adverbial idioms include *by and by* ("soon"), *to and fro* ("backwards and forwards"), *once in a blue moon* ("very rarely"), *tooth and nail* ("fiercely"). These often function adverbially in sentences. They typically follow the pattern *as [adjective] as [noun]* or are fixed adverbial phrases.
- Sentential idioms (Proverbs/Sayings): These are complete clauses or sentences with proverbial meaning. E.g. "Queen Anne is dead?" (an old rhetorical formula meaning "T'm telling a truth that might displease people") and "What will Mrs. Grundy say?" (asking about social reputation). Other examples: "An apple a day keeps the doctor away", "It goes without saying", "Better safe than sorry". They function as stand-alone statements or responses. Because these have full sentence form, they often carry general wisdom or social norms (the communicative class).

Structural Class	Example(s)	Meaning
Nominal Idiom	crocodile tears (n)	insincere tears; Pandora's box
Verbal Idiom	to go to pot (v)	deteriorate; spill the beans (idiomatic)
Adjectival/Adverbial Idiom	as cool as a cucumber (adj simile); by and	metaphorical cal(mness), literal sense
	<i>by</i> (adv)	"soon"
Sentential Idiom	"What will Mrs. Grundy say?" (full	"What will people say?" (social norm)
	sentence)	

These structural categories can be summarised as in Table 1 below:

Table 1. Examples of structural categories of phraseological units.

Within each class, idioms may show slight syntactic variability. For instance, noun-phrase idioms sometimes take plural or possessive forms (*"wheels of justice"* vs *"wheel of justice"*), and verb idioms may allow tense or aspect changes (*kicked the bucket, taking one's hat off*). However, many phraseological units resist internal substitutions or permutations (as noted by Cowie et al., 1993–1994) – e.g. *a bull in a china shop* cannot easily be altered.

# Semantic Categories

Phraseological units also differ in how their overall meaning relates to the meanings of their parts. We adopt the traditional three-way semantic typology, illustrated below with examples:

- Fully transparent (highly compositional) units: The overall meaning is essentially deducible from the literal meanings of the words. These are at the borderline of idioms and strong collocations. For example, *at the drop of a hat* (meaning *immediately*) is partly transparent (a drop of a hat implies immediacy). A truly transparent example might be *red herring* ("distraction" literally a smoked fish, but the origin is metonymic). Such units are relatively rare as true idioms, and some lists exclude them as collocations. In practice, we treat transparent units as the far end of a continuum (most collocations, few idioms).
- Semi-transparent (motivated) idioms: Here one or more components contributes to the figurative meaning by metaphor or metonymy. E.g. *break the ice* means 'initiate friendly interaction'; the literal idea of cracking ice is metaphorically extended to warming up a social situation. Likewise *add fuel to the fire* ('intensify hostility'), where the metaphor of fire stands for conflict. Phraseological unities in Vinogradov's sense fall here: the phrase is metaphorical but still anchored in its parts. The meaning can often be inferred with some cultural knowledge: *rock bottom* meaning *the lowest possible level* is partly transparent (a rock on the bottom). Transparent and semi-transparent idioms may allow learners to reason about their meaning.
- **Opaque (non-compositional) idioms:** The meaning cannot be deduced from the components. For example, *kick the bucket* ('to die') has no clear connection between the words *kick/bucket* and dying; *white elephant* ('useless costly possession') has no literal link to elephants. These correspond to Vinogradov's fusions and to non-compositional idioms in Cowie (1998). Such idioms are the most lexicalized and often culturally specific. Other examples: *dead ringer* (exact duplicate), *red tape* (bureaucratic procedure). These are prototypical idioms and are fully listed as such in idiom dictionaries.

These semantic types exist on a spectrum. As Fernando (1996) notes, both idioms and collocations include literal and figurative uses. In practice, one must often rely on usage evidence to judge transparency. For instance, *fly off the handle* can be understood metaphorically ("lose one's temper suddenly"), but a naive learner hearing it literally might guess wrongly. Context disambiguates: "He flew off the handle when he saw the mess" is clearly idiomatic. Some expressions (like *tooth and nail* meaning *fiercely*) are conventionally figurative but remain somewhat transparent via imagery (teeth and nails are related to fight).

#### **Discussion of Ambiguity and Context**

Many phraseological units exhibit context-dependence. An expression may appear idiomatic in one context and literal in another. For example, "we blew the whistle on corruption" is figurative (reveal

wrongdoing) whereas in sports it can be literal (use a whistle). Similarly, *turn tail* can be literal (an animal twisting) or idiomatic (*retreat in fear*). Metaphorical meanings can bleed into new phrases over time (e.g. "*launch pad*" – originally literal, now figurative for starting projects).

There are also **edge cases** between idioms and collocations. Some common verb-noun pairs (*commit a crime, make a decision*) are so frequent that one might call them "collocations" rather than idioms. They are fully compositional, so we do not include them as idiomatic. Yet other multiword units are ambiguous: for example, *cold shoulder* is idiomatic ("dismissively ignore") but also has a literal meaning (a shoulder that is physically cold). Only by convention do we know which meaning is intended in context.

Across registers, phraseological units vary. In colloquial speech one hears many idioms (*hang in there, hit the sack*), whereas in formal writing one finds more adverbial and nominal idioms (*by and large, comp de grâce*). The British National Corpus confirms that idioms occur in both spoken (e.g. "*Tve had it up to here*") and written texts ("*under the aegis of*"). Literary language abounds in metaphors turned idiomatic (Shakespeare's "*heart of gold*"). Journalistic English often uses vivid idioms for impact ("*cornered like a wild animal*", "*on the ropes*"). All registers contain phraseological units, but their frequency and form can shift by genre.

Taken together, the structural-semantic classification helps clarify the internal structure of English phraseology. For instance, *crocodile tears* (noun idiom, opaque) is distinct from *cry crocodile tears* (verb idiom, somewhat compositional). Recognizing these categories helps learners and analysts: a textbook might group idioms by type (noun phrase vs verb phrase) and by transparency (explaining *break the ice* via its metaphor).

# CONCLUSION

Phraseological units in English form a rich and varied class of expressions. We have proposed a twodimensional classification: one axis is structural form (nominal vs verbal vs adjectival/adverbial vs sentential), and the other is semantic transparency (fully transparent collocations through semicompositional idioms to opaque idioms). This typology captures most fixed expressions encountered in corpora and dictionaries. It highlights that **"idiomaticity" is a gradient property**: some units (like *break the ice* or *as good as gold*) are partially analyzable, while others (*kick the bucket, white elephant*) are wholly conventional.

This framework has practical relevance. In *lexicography*, dictionaries such as Cowie et al. (1994) organise entries by part of speech; our structural categories align with that practice. Knowing that *slow and steady* is a fixed adverbial phrase, for instance, helps lexicographers list it under adverbs. In *language teaching*, instructors can cluster idioms by type (e.g. all adjective similes like *as hot as hell*) and by semantic opacity, focusing student attention appropriately. In *computational linguistics*, algorithms for multi-word expression detection can exploit such categories: a system might use a pattern for noun-phrase idioms (adjective + noun) differently than for verb idioms.

Future research directions include **corpus-driven statistical modelling** of phraseology. Large corpora can reveal the degree of fixedness and collocational strength of candidate units, which could refine our categories quantitatively. Machine learning approaches might predict idiomaticity scores for n-grams, testing the transparent–opaque continuum. Additionally, expanding phraseological

dictionaries with usage notes (e.g. register and collocates from corpus data) would aid both humans and NLP systems. Finally, investigating how phraseological use evolves in new media (social networks, for instance) could show how fixed expressions gain or lose transparency over time.

In conclusion, a combined structural-semantic classification provides a clear map of English phraseological units, from simple collocations to full proverb sentencess. It underscores that phraseology is a core part of the language: mastering it is essential for fluency, and understanding it enriches our linguistic analysis of meaning.

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# Assessing the Impact of the Eurozone on National Economic Sovereignty

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Abstract: Eurozone membership entails ceding national monetary authority to the European Central Bank (ECB) and accepting supranational fiscal rules (e.g. the Maastricht criteria, Stability and Growth Pact (SGP), and Fiscal Compact). This paper examines how these arrangements have constrained member states' economic sovereignty since the 2008 crisis. Method: Using a comparative case study of four Eurozone countries (Greece, Italy, Germany, France), we analyse official data and policy developments from 2008 onward. Theoretical lenses include the economic policy "trilemma" (impossible trinity), economic interdependence, and neofunctionalist spillover. Results: We find that Euro membership has systematically curtailed unilateral monetary policy (no devaluation, uniform ECB rates) and imposed tight fiscal limits (3% deficit, 60% debt). During the sovereign-debt crisis, bailout conditionality and ECB interventions (e.g. OMT, QE) further eroded autonomy. Sovereignty was shared or pooled in many areas of economic policy (e.g. coordinated budget review, banking supervision). However, differences emerged: Germany and France enjoyed policy space earlier on, while Greece and Italy bore stricter external control (Troika programmes, market pressure) and deeper recessions. Conclusions: Eurozone membership has unquestionably limited national fiscal and monetary discretion, validating concerns about constrained sovereignty. Yet institutions have adapted (strengthened fiscal governance, banking union) and there are proposals for further reforms (fiscal union, central stabilization funds) to reconcile stability with democratic control. Within the existing Euro-area framework, states strive for adaptive strategies (structural reforms, fiscal buffers, and coordinated policy) to mitigate sovereignty loss.

**Keywords:** Eurozone; economic sovereignty; monetary policy; Stability and Growth Pact; Fiscal Compact; neofunctionalism; economic policy trilemma.

#### INTRODUCTION

The creation of the Economic and Monetary Union (EMU) and the euro fundamentally altered the relationship between European states and their economic policy autonomy. At Maastricht in 1992 and in subsequent treaties, Euro-area members agreed to forfeit independent monetary sovereignty to the European Central Bank (ECB) – a "currency without a state" – while retaining national control over fiscal and other policies. In effect, governments surrendered the traditional national tools of monetary policy (money supply, exchange rates) in exchange for deeper economic integration. Over time this

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has raised acute questions about how far national economic sovereignty survives in a commoncurrency area.

Economic sovereignty, here defined as the capacity of a national government to set and implement fiscal, monetary and financial policies independently, has been constrained by Euro-zone membership. The Maastricht Treaty and the Stability and Growth Pact (SGP) impose strict rules on deficits (<3% GDP) and debt (<60% GDP). The fiscal Compact (Treaty on Stability, Coordination and Governance, 2012) went further by requiring balanced-budget rules in domestic law. Meanwhile, the ECB's mandate – to maintain area-wide price stability – precludes national interest-rate setting. This institutional design implies that Euro-area policymakers "do whatever is required" collectively but must share, not individually keep, sovereignty over key economic policies.

This paper analyses how these arrangements have played out since the 2008 financial crisis, focusing on post-crisis dynamics in the Eurozone. We ask: to what extent has membership affected national fiscal and monetary autonomy, and how have member states adapted? The study is framed by three theories. Economic interdependence suggests that deep trade and financial links among EU countries tie their fortunes together, potentially reducing the appetite for independent policy. Neofunctionalism predicts that crises will trigger deeper integration (spillovers), as seen in the EU's crisis-management mechanisms. And the economic policy trilemma (impossible trinity) implies that a fixed currency plus free capital flows inherently excludes independent national monetary policy.

We address these questions via a comparative case study of four Euro-area countries – Greece, Italy, Germany and France – chosen for their varied experiences. Using official data (Eurostat, OECD, IMF, ECB) and scholarly sources, we examine how each country's policy space has been affected by Euro rules and crises (2008–2025), and what reforms or strategies have emerged. The paper proceeds with a theoretical framework, then outlines the methodology, followed by results and analysis of the cases, a broader discussion, and conclusions.

#### **Theoretical Framework**

Our analysis draws on integration and macroeconomic theories to frame how Euro membership influences sovereignty. Economic interdependence implies that close economic ties (trade, investment, banking) make shocks shared and policies interlinked. In such a context, national decisions have cross-border effects, which can foster coordination or lead to collective governance. For instance, unified markets and finances in Europe have increased mutual dependencies, creating both incentives for common policy (e.g. a single currency to facilitate trade) and constraints on independent action.

The economic policy trilemma (impossible trinity) articulates a basic macroeconomic constraint: a country cannot simultaneously maintain (a) a fixed exchange rate, (b) open capital markets, and (c) an independent monetary policy. By adopting the euro, members achieved (a) and (b) by definition, meaning they sacrificed (c). Thus, no individual Euro-area state can adjust its interest rate or currency value; monetary policy is centralized in the ECB. In practical terms, this means that national policy tools to respond to asymmetric shocks (e.g. recessions) are limited, forcing a heavier reliance on fiscal policy or structural reforms (which are themselves constrained by union rules).

Neofunctionalism suggests that crises and functional pressures tend to generate "spillover" integration: problems in one policy area create demand for supranational solutions that deepen union. In the Eurozone crisis, the mismatch between centralized monetary policy and decentralized fiscal regimes illustrated by Niemann and Ioannou, for example, "laid the ground" for further integration. They find that new crises management institutions (ESM, banking union, two-pack fiscal rules) emerged precisely because the Maastricht architecture was incomplete. Neofunctionalism thus predicts that Euro-area governance would evolve under pressure, pooling more sovereignty. Indeed, as one analysis notes, economic integration during the crisis became "an area of 'high politics', i.e. close to the heart of national sovereignty," yet integration deepened nonetheless.

These frameworks help us interpret the Eurozone experience: high interdependence and common shocks created incentives for collective action, while the trilemma forced a surrender of monetary autonomy. Neofunctionalist logic suggests that crisis-led steps (banking union, fiscal oversight) were predictable spillovers. At the same time, the residual national sovereignty – especially in fiscal and structural policies – has been defended vigorously by member states, producing tension between cooperation and autonomy. In sum, these theories imply that Euro-membership inherently limits national control of macroeconomic policy, but also generates pressures for incremental pooling of sovereignty.

# METHODOLOGY

This study employs a comparative case study approach, examining Greece, Italy, Germany, and France as representative Eurozone members with differing economic structures and crisis experiences. These four cases were selected to capture diversity: two peripheral economies (Greece, Italy) that suffered intense debt crises and required adjustment programmes, and two core economies (Germany, France) that influenced Euro-area policies and experienced milder crises. The post-2008 period is the focus, as it saw major changes in EMU governance.

We compile qualitative and quantitative evidence from official sources (European Central Bank, Eurostat, OECD, IMF, European Commission reports) and the academic literature. Key variables include fiscal deficits, debt levels, GDP growth, unemployment, and policy measures (e.g. bailouts, reforms). Policy instruments under study include the Stability and Growth Pact (SGP), the Fiscal Compact (Treaty on Stability, Coordination and Governance), and ECB interventions (OMT, quantitative easing, banking union measures). We trace how each country's policy choices and outcomes were shaped by these instruments, and document cases of sovereign constraint (e.g. forced austerity, deferring budgets to Brussels).

The analysis is descriptive and interpretive. We first review each country's macroeconomic trajectory and policy responses, highlighting instances of lost autonomy (monetary/ fiscal). We then compare across cases to identify common patterns and differences. The theoretical frameworks (interdependence, neofunctionalism, trilemma) guide the interpretation of findings. For example, we assess whether crisis-driven policy integration (e.g. Troika programs, banking union) fits neofunctionalist spillovers, and how countries contend with the trilemma (fixed currency, free capital, no own monetary tools).

Methodological limitations are acknowledged: this is not a formal econometric study, but an in-depth policy analysis. To enhance rigor, we rely on multiple sources and triangulate data (e.g. ECB and

OECD statistics). We refrain from oversimplification by contextualizing outcomes within each nation's political economy. Nevertheless, the comparative approach illuminates the broader impact of Eurozone membership on sovereignty, beyond any single country's story.

# **RESULTS AND ANALYSIS**

#### Greece

Greece exemplifies the stark loss of sovereignty under the euro. After years of hidden deficits, the 2008–2010 crisis revealed unsustainable finances. Without its own currency, Greece could not devalue to regain competitiveness and was "handcuffed by the ECB" to the euro's one-size-fits-all policy. Greek interest rates soared when markets distrusted its debt, but the country could not lower them independently. With the Maastricht "no bail-out" rule (Article 125 TFEU) precluding any automatic rescue, Greece relied on external bailouts from the EU/IMF "Troika" (2010, 2012, 2015).

These programmes imposed strict conditionality on fiscal and structural policy. In practical terms, Greece ceded fiscal sovereignty to the Troika: budget decisions, tax policy, and spending cuts were negotiated with Brussels and the IMF. Critics note that under such programmes "countries have de facto lost their sovereignty" by becoming subject to creditors' conditionality. Indeed, the ECB paper notes that Greece's extreme deficit and debt left it highly vulnerable and unable to counter the crisis with domestic policy tools. The result was deep recession: real GDP fell by roughly 25% from 2009 to 2015, unemployment surged to ~27%, and incomes collapsed.

Greece's case shows how Eurozone rules can act as an economic straitjacket. The SGP (3% deficit limit) was violated, but enforcement gave way only as Troika packages took effect. Even then, fiscal policy remained under tight external supervision. Monetary sovereignty was entirely surrendered; Greece could not inflate away debt or stimulate via interest rates. On the positive side, ECB interventions (Bond-buying under OMT promises, and later QE) stabilized funding and likely prevented disorderly default. However, those ECB actions were supranational and came with no national control. Greece's experience underlines how Euro membership can transform sovereign budgetary policy into a negotiated program, and monetary policy into policy determined by a supranational authority.

#### Italy

Italy entered the crisis with high public debt (~120% of GDP) and slow growth. Like Greece, Italy could not devalue its currency or set local rates, so during 2011–12 a loss of market confidence raised yields. Italy eventually avoided a formal bailout, partly due to its larger economy and domestic adjustments. Instead, the EU and ECB exerted heavy pressure on Rome. For example, the EU demanded a 2011 corrective budget and later enacted tough budget oversight (two-pack, Six-Pack legislation) to enforce SGP rules.

Under these pressures, Italy's policy space narrowed. The 2012 Fiscal Compact required Italy to translate the EU balanced-budget rule into national law. In 2011, Italy amended its constitution to include a "golden rule" for debt, effectively cementing fiscal discipline. Nevertheless, Italy's austerity measures – spending cuts and tax increases – were partly driven by EU institutional pressure (and even by ECB warnings). According to Beukers, the crisis saw "new instances of ECB pressure on

Member States to adopt policy reform" in fiscal areas, a description that fits Italy's experience. Italian social policy and investments were constrained to meet European deficit targets.

When Mario Monti took over as Prime Minister in late 2011, he rhetorically reaffirmed Italy's commitment to Euro rules to reassure markets. Monti's government enacted pension and labor reforms under EU urging, again illustrating reduced sovereignty. Yet unlike Greece, Italy retained more control by negotiating within the EU (it did not have a Troika). Markets, however, effectively disciplined Italy by making deficit financing costly; here Italy's vulnerability as a large debtor was the mechanism of constraint.

Overall, Italy's case shows a more subtle sovereignty loss: It still ran national elections and budgets, but under the constant watch of Eurozone rules. The imposition of austerity by treaty obligations (SGP and Fiscal Compact) and by market logic meant Italy's "choice sets" for fiscal policy were tightly bounded. Moreover, without currency flexibility, Italy had to rely on product and labor market reforms (many EU-recommended) to restore competitiveness – again indicating rule-driven policy rather than purely domestic choice.

#### Germany

Germany's experience contrasts sharply. Entering the crisis with low debt and current-account surplus, Germany was less threatened by panic. It retained more effective policy autonomy simply because it was the creditor. German monetary policy was influenced by the ECB's low-rate regime (which some critics argue was too loose for Germany's needs), but there was no episode of market-imposed austerity.

Still, Germany's sovereignty was not untouched. To satisfy Euro rules and support weaker partners, Germany engaged in new coordination. For example, it approved the European Financial Stability Facility (EFSF) and later the permanent European Stability Mechanism (ESM) – steps that pooled fiscal risk at the Euro-area level. Domestically, Germany implemented its own "debt brake" (Schuldenbremse) in 2009, enshrining fiscal discipline in the constitution. This rule aligned with the Stability Pact's goals but was chosen autonomously. On the monetary side, Germany effectively delegated to the ECB, and later benefited from ECB bond purchases (both of Italian/Spanish bonds and German debt) which kept yields low.

Notably, Germany was a leading advocate for strict enforcement of EU rules, as it sought assurance that other members would not be allowed to ignore fiscal limits. Thus, Germany's sovereignty was partly expressed through shaping Eurogovernance (pursuing the debt brake and SGP reforms). In trade terms, Germany's economy integrated deeply with other Euro partners; this interdependence arguably boosted support for the single currency, at the cost of requiring solidarity instruments. Germany's case shows that "sovereign" states in the core may gain influence in rule-setting, but still pool control (through ECB policies and EU budgets) to stabilize the system.

# France

France occupies a middle ground. It too ran deficits above Maastricht limits and had slowing growth, drawing criticism from EU partners. Paris repeatedly pressed for more flexible interpretation of fiscal rules (e.g. counting national "growth pacts" when calculating deficit) while also endorsing the euro's

stability. France managed to avoid a bailout by promising fiscal restraint and implementing some cuts (2012–13 austerity budgets) under EU surveillance.

Under President Macron (2017–2022), France pushed for Eurozone reform within the existing framework. Initiatives like the Franco-German proposal (2017) and the Future of Europe debates sought a Eurozone budget and debt instrument for investment – essentially a fiscal capacity – but they stopped short of treaty change. France's strategy has been to work within the rules to build solidarity (e.g. supporting ESM aid for Greece, endorsing ECB activism) while preserving core aspects of national autonomy. Monetary policy did not suit France perfectly (low ECB rates and high inflation concerns), but France accepted the ECB's decisions as part of collective governance.

Overall, France's sovereignty was constrained mostly by shared rule-enforcement: it had to align its budgets with SGP targets (even if by optimistic "structural" accounting) and comply with EU economic coordination (European Semester recommendations, the Two-Pack/Three-Pack oversight). The effect has been fiscal adjustment with limited offsetting stimulus. Still, France retained more leeway than Greece or Italy in setting its economic agenda (having avoided a formal program and being a big EU shareholder). Its case illustrates that within the Eurozone, large countries must negotiate compromises in governance: sovereignty is shared but also a tool of bargaining over rules and their application.

# DISCUSSION

Across these cases, clear patterns emerge: Eurozone membership has placed hard limits on national economic sovereignty, primarily through fiscal rules and a centralized monetary authority. The Stability and Growth Pact and later Fiscal Compact legally constrain budgets. Even when rules were broken or bent (as before the crisis), crisis conditions enforced compliance. Krugman's old adage holds: with a fixed currency (the euro) and free capital flows, countries lose independent monetary policy. This loss has material consequences: for example, the inability to devalue forced deficit countries to endure internal devaluation (falling prices and wages) and painful debt adjustment. In practice, the ECB took on the role of stabilizer: measures like Outright Monetary Transactions and quantitative easing provided relief, but at the supra-national level and often with conditionality of sorts.

The COVID-19 pandemic (post-period) has also shown the issue: in 2020 the ECB and EU collectively agreed on relaxation (allowing deficits above 3%) for all members, demonstrating how rules can flex under extreme stress. But this move was decided at EU summits, again highlighting that fiscal decisions are now made through negotiation rather than solely at national discretion.

The absence of a central fiscal mechanism remains a key constraint. As the ECB's analysis notes, unlike federal states (US, Switzerland), EMU has no common budget for stabilization. This means recessions hit countries harder: Germany and France used national stimulus in 2020, whereas Greece and Italy could not. Some risk-sharing exists (e.g. ESM credit lines, ECB lending to banks), but these are reactive and conditional, not automatic stabilizers. Thus, the Euro-area design upholds member-state sovereignty in many domains (labour, education, taxation choices) but suspends it where macro stability is deemed vital.

Neofunctionalist theory is borne out in part: the crisis spurred deeper integration (banking union, stronger fiscal surveillance) without new treaties, as predicted. Niemann & Ioannou argue these are

"integrative outcomes" from the original EMU's incomplete structure. However, the process is conflictual, not seamless. Member states have resisted ceding additional sovereignty (the 2011 ECB paper noted the "unwillingness to transfer the necessary degree of sovereignty" even in reforms). Thus, sovereignty today is often exercised jointly – for instance, national budgets must be approved under European oversight – or split (monetary at ECB, fiscal national but under EU rule).

Looking forward, potential reforms fall into three categories. First are fiscal union measures: proposals for a common Euro-area budget or eurobonds (joint debt) would pool fiscal sovereignty and provide stabilizers. Second are banking/balance-sheet tools: completing the banking union (e.g. common deposit insurance) would shield public finances from bank failures, indirectly restoring some national financial policy space. Third are flexibility mechanisms: for example, well-designed escape clauses or "rainy day" funds could allow national budgets to respond in downturns without breaching rules. All these have been discussed (Five Presidents' Report, Macron's proposals), but implementation has been partial. As Pisani-Ferry argues, true monetary union requires either fiscal union or overwhelming ECB intervention – implying further pooling of sovereignty.

Within the existing framework, member states have developed adaptive strategies. These include structural reforms (to boost growth without pro-cyclical spending), reliance on EU structural funds and development banks, and improved tax and welfare policies to increase resilience. On the monetary side, some advocate strategic use of national development banks (since fiscal deficits are limited) and indirect instruments like macroprudential banking policy to achieve local goals. Politically, governments emphasize sharing the narrative: they present Euro-constraints as common commitments rather than external impositions, to maintain public legitimacy of "shared sovereignty." For instance, during the pandemic Germany and France jointly argued for temporary rule suspension, framing it as collective, not uncoordinated national, action.

In sum, Eurozone membership has demonstrably constrained both monetary and fiscal sovereignty of its members. Countries like Greece and Italy experienced this most painfully, having to submit large parts of policy to supranational control. Germany and France, though technically more autonomous, also operate within a rules-bound regime and influence it collectively. The sovereignty "lost" in certain domains has in many respects become "shared" in a broader institutional framework. Whether this trade-off is acceptable remains debated, but pragmatically, member states now navigate a complex balance: maintaining national authority where feasible (e.g. in social policy and regulation) while coordinating tightly in macroeconomic policy to preserve the Eurozone's stability.

# CONCLUSION

The euro's design has had a profound impact on national economic sovereignty. By mandating a single currency and centralized monetary policy, and by enforcing strict fiscal rules, Eurozone membership inevitably curtailed individual states' autonomy over macroeconomic levers. Our case studies show that since 2008 these constraints have been decisive in shaping policy: Greece and Italy saw much of their fiscal decision-making effectively transferred to EU-led programmes, while Germany and France worked within tighter EU fiscal governance than before. The ECB's crisis interventions further underscored a shift toward supranational decision-making in monetary affairs.

At the same time, the Eurozone architecture has evolved in response to these pressures. Crisis-era reforms (financial backstops, new rules) illustrate neofunctionalist spillover, even as they reflect

member states' insistence on controlling the pace of integration. Policymakers have recognized the limitations: many analysts urge moving toward a genuine fiscal union or creating central stabilisation tools (fiscal capacity, unemployment insurance, eurobonds) to make the arrangement more sustainable. No major treaty changes have yet occurred, but incremental steps (banking union, limited shared budgets) continue.

In the interim, Euro-area members are adapting. Governments seek to strengthen structural resilience and use the leeway permitted by the rules (e.g. focusing on structural deficit measures). Coordination mechanisms (European Semester, Fiscal Board) aim to improve credibility without giving up sovereignty. The ECB itself has signaled its commitment to price stability while also accepting an expanded role (pressuring for reforms, acting as lender of last resort) that blurs lines with fiscal policy.

In conclusion, membership of the Eurozone has delivered both benefits (elimination of exchange risk, deeper market integration) and costs in terms of national policy autonomy. The balance between pooled and national sovereignty remains a central tension in EU politics. Future reforms will likely test how much more sovereignty countries are willing to share. For now, the empirical evidence is clear: the constraints of the euro make national economies more integrated but less independent, and managing this trade-off is a defining challenge of contemporary European economic governance.

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