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Tandem.MINT – Taking advantage of the pandemic

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Abstract

Being able to interact in an international environment has become more and more important in the field of STEM disciplines. To offer STEM students the option of acquiring intercultural skills and improving their language competence, Tandem.MINT was created as an innovative language and cultural learning program explicitly for STEM students to allow a specified approach, catering to the needs of this particular group. In the beginning, the tandem was offered in a face-to-face manner, enabling local as well as international students to support each other in enhancing their language and intercultural competences. Due to the pandemic, Tandem.MINT was moved online, allowing cooperation with international universities, thus broadening the pool of participants. Evaluations showed that both the face-to-face version and especially the e-tandem are well received by the participants and increased language as well as intercultural competences significantly.

Keywords: *STEM education; engineering education; tandem language learning; internationalization at home; intercultural competence; e-learning.*

1. Introduction

Internationalization, intercultural competence and knowledge of foreign languages has become more and more important in times of global interconnectivity. While this is true for all academic disciplines, the imperative for STEM disciplines may even be more significant. On the one hand, more companies employing graduates from STEM disciplines are involved in multi-cultural contexts, requiring engineers as well as scientists across all STEM disciplines to collaborate with colleagues and stakeholders from all over the world (Johri & Jesiek, 2014). On the other hand, STEM disciplines play a vital role in finding solutions to supranational issues like climate change, pollution etc. that we are facing as a world society (Jones, 2018). Thus, it is no longer optional to focus exclusively on the content of the subject; incorporating the development of intercultural and foreign language skills as well as the understanding of global perspectives has become a necessity.

For a long time, student mobility was seen as the golden standard when it comes to acquiring intercultural competences and foreign language skills. Downey et al. (2006) showed that students of engineering sciences are assisted by a whole variety of different formats and measures to develop such competencies, including studies abroad, international projects, work placements, field trips, and integrated class experiences. Knight et al. (2019) argue that intentionally designed, short-term, faculty-led study abroad experiences have the potential to expand the number of engineering students who have international experiences. In addition, well-implemented short-term programs have shown to be valuable to increase students' global competency (Chieffo & Griffiths, 2009).

However, the overall expense of international student mobility is immense (Johri & Jesiek, 2014) and it tends to exclude students from lower income backgrounds or those involved in other responsibilities apart from their studies (Ackers 2010, Rodrigues 2012). In addition, the world-wide COVID-19 pandemic has brought global mobility to a halt, requiring universities to find solutions that allow students to acquire intercultural competences and language skills while at home. One such option is the unique tandem project Tandem.MINT at Ruhr-Universität Bochum (RUB) - a language tandem exclusively designed for STEM students (MINT being the German acronym for STEM), catering to their needs in acquiring language and intercultural competences specific to their disciplines.

2. Concept of Tandem.MINT

Tandem.MINT is an innovative language learning program that was established at Ruhr-Universität Bochum in 2018 as specified language program to promote Internationalization At Home. It was developed by two publicly funded projects, ELLI2 and InSTUDIESplus in cooperation with experts in language pedagogy from the University Language Center (ZFA) and is designed specifically for STEM students who want to improve their foreign language

skills and obtain intercultural competences. Tandem language learning has been offered by the ZFA for many years and is an established part of higher education at most universities across Germany (Spänkuch, Dittmann et al. 2019). However, when it comes to language learning, STEM students have different needs and aspirations than students of the humanities and social sciences. Their main focus is not mastering a language to achieve near native-like competences, but being able to use it in a professional context in order to communicate effectively with fellow students and colleagues from other language backgrounds (Paretti, McNair et al. 2014). In Tandem.MINT, the general concept of the tandem as a peer-learning offer is taken up: each term, pairs of two students of local and international background are invited to explore the language of their respective partner and immerse themselves in another culture by taking turns in conversing in the foreign language. Topics and materials can be freely chosen by the tandem partners, enabling them to work with authentic texts that are of interest to both of them. Unlike in a language course, the level of oral interaction is much higher, more authentic (Brammerts 2003) and can be specifically tailored to the requirements and wishes of the participants: the tandem partners work in a reciprocal and autonomous way (Lewis & Peters, 2019; Brammerts, 1996), and spend more time actually speaking the other language. Both speakers can explicitly help their partner become aware and avoid recurring mistakes by negotiating preferred ways and strategies of correcting each other (Lewis & Peters, 2019). Inhibitions speaking the language are lowered as well, since both partners are in the same situation and are at similar levels in their target languages: to participate, the applicants need to speak their target language at level B1 or higher[1]. Pairing STEM students creates the advantage that the tandem can also be used for a subject-specific exchange, enhancing specified vocabulary and allowing to compare and discuss laboratory work and other work procedures in different countries, going through job offers and applications for STEM related professional contexts and so on. Tandem.MINT combines autonomous student-led conversation sessions with moderated workshops, addressing topics for all participants. An accompanying online class on the e-learning platform Moodle is used for communication, enabling the exchange of ideas with participants and coordinators of the program (Ulbrich & Strenger, 2019).

One major issue with tandem learning is the discrepancy between the languages that are requested as target languages and the languages offered by international students at RUB. English is usually high in demand (Strenger & Schiffmann, 2020), while international STEM students wishing to improve their German often come from a very diverse set of language backgrounds including languages that are not taught in Germany (e.g. Bangla, Telugu, Igbo, Malayalam) or are rarely requested (e.g. Arabic, Turkish, Farsi). To circumvent this, participants of other native tongues but with a high command of English (at least C1) were also paired with English learners, which can be an advantage. Native speakers often lack

[1] According to the Common European framework of references for languages (CEFR)

explicit knowledge about grammatical constructions that are acquired through structured language instruction. They mostly rely on their intuition to determine whether something is correct or incorrect, but are unable to explain why exactly this is the case. Non-native speakers may thus be at an advantage when it comes to helping others improve their grammar.

3. Moving online

In the beginning, Tandem.MINT was designed to pair two students who both study at RUB to use the potential of a whole variety of international languages and create more connections between the students. The participants were free to meet face to face on- or off-campus on a weekly basis to have authentic interactions. Since then, the number of applications and matches were constantly on a high level, even increasing. This can be seen in Figure 1.

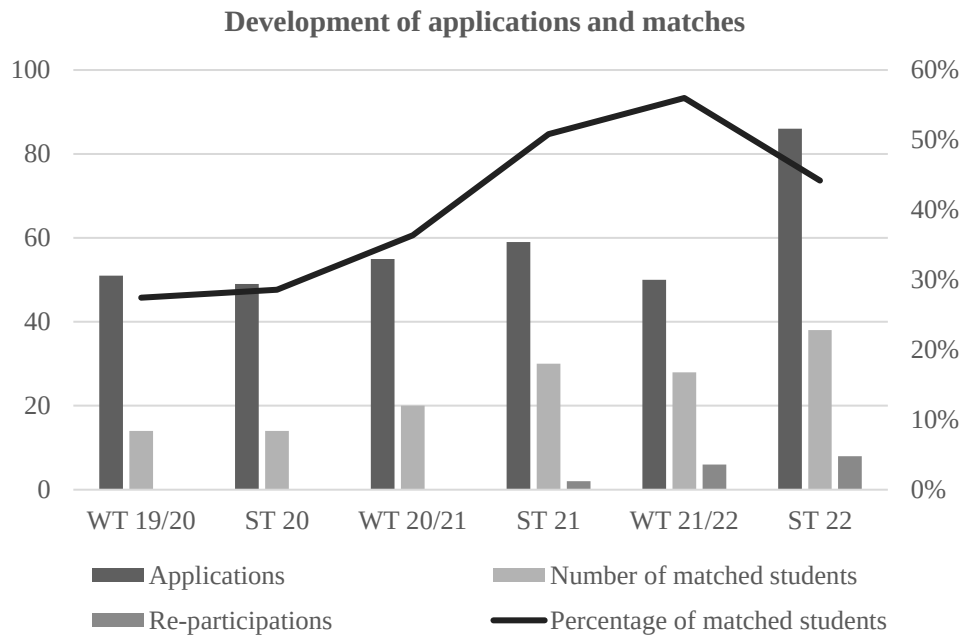

Figure 1: Development of applications and matches

In the last term before the pandemic (winter term 2019/20), 51 students applied to the program, but only seven pairs (14 participants) could be matched: three English-German (with non-native speakers fulfilling the English part), three Spanish-German pairs and one Chinese-German pair (all native speakers of the respective languages).

The COVID-19 pandemic spreading across the globe in early 2020 was both a challenge and a chance for Tandem.MINT. Students who wanted to go abroad or were accepted at RUB as

incoming exchange students were not able to travel. All classes had to be held online, meeting on campus was no longer an option. Thus, the tandem program had to be recreated ad hoc as a digital format, which was new territory because the personal aspect of meeting with the partner in person is usually an essential part of the tandem concept. However, it showed that an e-tandem offered possibilities that a face-to-face tandem could not: Students could participate regardless of their location, offering the chance to broaden the pool of native speakers of languages high in demand. In hindsight, this global situation with its local impact laid the groundwork for later cooperation opportunities with international partner universities.

In the summer term 2020 when the tandem had to be changed spontaneously from a face-to-face version to an e-tandem, the number of applicants was similarly high as in the previous semester (49 applicants). The concern that students would withdraw their application was unfounded, again allowing seven pairs (14 participants) to enter the program. English was again the language with the highest demand, but the English part was also fulfilled by non-native speakers once more. The other pairs (one German-Italian, one German-Chinese and one German-Spanish pair) consisted of native speakers only.

3.1 Cooperation partners

In the winter term 2020/2021, Tandem.MINT was planned as an e-tandem program right from the beginning. By taking advantage of the opportunity to offer it online only, it was possible to open it up to a cooperation with a foreign partner university, since the participating students did not have to be physically present at Ruhr-Universität Bochum anymore. A first cooperation was designed and implemented with the Department of Engineering at Virginia Tech (VT), Blacksburg, USA, making it possible to offer more English native speakers as potential partners to the German RUB students.

The lack of new international incomings did not pose a problem and not only did the number of applicants increase but so did the number of possible matches: 55 students wanted to participate and it was possible to match 12 pairs. Unfortunately, two pairs withdrew their application because they were matched with non-native speakers. However, for the first time four out of seven English-German pairs were made up of native speakers for both languages and only three Germans had to be paired with non-natives who spoke English at a C1 or even a C2 level. The other three pairs (German-Russian, German-French and German-Spanish) consisted of native speakers.

The cooperation with VT proved to be very successful: In the two following semesters, a steady number of applications from VT came in, and four VT students even applied for a second round. While the cooperation with VT has been limited to the department of engineering so far, there are plans to expand the tandem to include students from other STEM

disciplines and with further language combinations at VT, starting in the winter semester 2022/23.

3.2 Advantages and challenges

The number of applicants rose to 59 in the second round that was advertised as an online tandem from the beginning (ST 21). The coordinators of the program assumed that the reason for this was the lack of personal interaction between students due to the pandemic situation and the missing possibilities to meet new people on campus. This was confirmed in the reflection session, which is a mandatory part and provides a first evaluation of the program. In the third online round (WT 21/22), application numbers dropped down to 50, presumably due to general fatigue with online classes – again, the students confirmed this in the reflection session. However, due to new incoming students, it was possible to match 14 pairs (28 participants) even in this semester. Fortunately, the registration numbers increased significantly in the current semester (ST 22) and 19 pairs could be formed out of 86 applications.

The tandem has been evaluated by a pre- and post-survey. However, the post-survey often overlaps with many simultaneous course evaluations in other classes, leading to a general evaluation fatigue. Thus, the most valuable feedback comes from the reflection session and the final reports the students have to hand in to receive a certificate of participation. One recurrent complaint with the online format is the lack of personal face-to-face interaction, something that was out of the hands of the coordinators for the first three online semesters. In the fourth round, students were free to meet in person but expressed the wish for an organized meeting on campus with all participants. This will be considered in the coming semesters (always in line with the rules and regulations regarding COVID-19 set by the university) – although it would exclude all students from abroad if no hybrid option is offered.

Another complaint was the coordination of the individual tandem meetings because of the time differences. However, the benefit of being paired with an American native speaker seems to outweigh this particular setback.

4. Conclusion

Tandem.MINT is a very successful program and well-received by the targeted group. It has become a valuable source for improving language skills and intercultural competences, which has been confirmed by the students. The tandem in its digital form seems to be very attractive to students, as the large number of applications in the previous semesters showed. While it is not a requirement to write a final report, the number of students who hand it in to receive a certificate of participation has risen steadily as well, showing that the participants stay in the program to the end. Additional personal feedback via email confirmed that even those who did not write the final report for the certificate still benefit from the program and simply

participated out of personal interest. Re-applications both from RUB and VT students show a high level of commitment and enthusiasm regarding the program. As found by post-survey evaluations, the main aim is not receiving academic credit but the personal gain in the areas of language skills and intercultural competency. Originally designed as concept to enhance international activities, the interest in Tandem.MINT as an intercultural and language learning program is rising, in particular within the rounds that were run digitally. The extensive matching process aims at making the students' competences available to each tandem, making use of the high intrinsic motivation of the participants. Students understand and accept the program as a beneficial addition to their main course of study. Since the cooperation with VT has proven to be a success, establishing further cooperations with international partner universities, e.g., within the framework of the European University Initiative, is currently being explored.

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