**The discourse turn-taking of the high-level support from Group B**

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| **Line** | **Participant** | **Discourse content** | **Code** |
| 1 | SB3 | It involves a question: Do student behaviors overlap on the temporal dimension? Some students react positively and some students give presentations. Is it helpful for instructors to modify the teaching mode? So I think the point is how the data plays the role during the classes. | Que-ela, I-per-exp |
| 2 | Ins | What data? | IS-1 |
| 3 | SB1 | We just talked about whether the student behaviors in the classroom occurred at the same time. | Reg |
| 4 | Ins | Yep, you counted the frequency of the data, but did not mention the temporal relationships. | IS-4 |
| 5 | SB1 | Shall we consider the transitional relationship in a temporal way? | Que-exp |
| 6 | Ins | How about try a temporal bubble diagram? One axis shows the category and another shows the time. When a certain category appears, there is a bubble. So you can see what behaviors occur at this point of time, and the frequency can be reflected by the bubble size. Do you think it is useful for instructors to take the temporal dimension into account? | IS-4 |
| 7 | SB1 | It might be effective. For example, student behaviors occur a lot at the same time, which might indicate that the atmosphere is very active. Is it possible that the instructors use some approaches to motivate the student’s learning interest? | I-per-ela |
| 8 | Ins | Therefore, your design only counts the frequency. When the frequency of student behaviors is high, the instructor might know the responses of students are positive, right? Of course, the frequency is useful for the instructor to understand the overall status of the class. | IS-4 |
| 9 | SB1 | Yes, but the instructor can only see the overall situation, but can't focus on a specific behavior from a student. | I-per-exp |
| 10 | SB2 | Which behavior really reflects student’s engagement? | Que-exp |
| 11 | Ins | In this case, can we analyze both the instructor and students’ behaviors together? For example, the instructor had a behavior, then students reacted with some types of behaviors. Can it answer this question? | IS-4 |
| 12 | SB3 | We can put them all in a temporal diagram. | I-per-exp |
| 13 | Ins | All the behaviors? | IS-1 |
| 14 | SB3 | Yes, but the data is a little bit complicated, I think we should focus on one critical point, because it covers too much information now. | I-per-ela, Reg |
| 15 | Ins | For example…? The course may have a period of time to do a particular task, and you can focus on it. It might be not important to analyze the instructor behaviors in some period of time during the class. But that's a good point to analyze instructor and student data together. | IS-4 |
| 16 | SB3 | I agree with that. | I-per-exp |

**The discourse turn-taking of the medium-level support from Group C**

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| **Line** | **Participant** | **Discourse content** | **Code** |
| 1 | Ins | The performances in the face-to-face learning indicated their grades, right? | IS-1 |
| 2 | SC1 | Yes. | I-per-exp |
| 3 | Ins | If in this case… You did not include the face-to-face learning. The design of flipped classes only includes the online leaning data and the final grades, right? Is this grade from the face-to-face learning ? or something else? | IS-3 |
| 4 | SC1 | It is the performance in the face-to-face learning. | I-per-exp |
| 5 | Ins | So the face-to-face learning performance is not correctly reflected, right? | IS-1 |
| 6 | SC2 | We mainly collect multimodal data during online learning. And perhaps... the face-to-face part is just the criterion for group clustering. | I-per-ela |
| 7 | Ins | It’s OK, but again, the data from the face-to-face learning is not complete, right? | IS-1 |
| 8 | SC2 | Yes…… but we think there has been a lot of data online, and it may be too complicated if we add the face-to-face learning data. | I-per-exp |
| 9 | Ins | Sure, it is OK to include the final grades from the face-to-face learning part. It should be noted that the course is taken online and then tested offline. But it is not the real type of flipped classes, right? Flipped class usually requires students to learn knowledge online, and then discuss some difficult questions through the face-to-face ways. | IS-4 |
| 10 | SC2 | What about adding a face-to-face discussion? | Que-exp |
| 11 | Ins | So it looks like examining the relation between online learning and learning outcomes. There’s actually no face-to-face part, because it's not reflected in the data collection and analysis. | IS-4 |
| 12 | SC3 | Let's add the face-to-face learning data and move the online discussion to the offline context. The research question remains the same, that is, exploring the relations between the final performance and student participation in both the online and face-to-face learning contexts. | I-per-ela |
| 13 | SC2 | So there's no difference between the online and face-to-face contexts, right? The first question is about participation, and the second one is about learning performance. | P-per-ela |

**The discourse turn-taking of the low-level support from Group A**

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| **Line** | **Participant** | **Discourse content** | **Code** |
| 1 | Ins | Can technologies improve the quality of instruction? | IS-2 |
| 2 | SA2 | Technologies can improve the instruction quality, but it is difficult to guarantee the improvement of instruction quality. | I-per-exp |
| 3 | Ins | So you think it can’t improve the instruction quality. What about others? | IS-2 |
| 4 | SA3 | I agree with her. | I-per-exp |
| 5 | SA1 | I think that it depends on how the instructor uses the technologies, or the instructional designs. | I-per-exp |
| 6 | Ins | What about you, A4? | IS-2 |
| 7 | SA4 | I think it can improve the quality. | I-per-exp |
| 8 | Ins | Ok, we are divided into two types of opinions, so let’s have a debate and talk about why. | IS-1 |
| 9 | SA4 | Because some functions of visualization can’t be achieved without the tools and technologies. | I-per-ela |
| 10 | Ins | Ok, this is your opinion. What about others? | IS-2 |
| 11 | SA2 | Without the instructor’s design of the instructional process, when we rely on technology per se, it is just like watching the computer or TV, which cannot improve the instruction quality. | I-per-ela |
| 12 | SA4 | If there is no technology, an instructor can arrange the course well and teach it with primitive tools and approaches, such as…… However, if there is a technology, such as…… the instructor can make it easy for students to understand the knowledge. So, the quality of the instruction can be improved. | P-per-ela |
| 13 | SA3 | In my opinion, technology is only one of the factors for the high-quality instruction. The factors of high-quality instruction include advanced technology, instructional design, students’ concentration, and so on. | P-per-ela |
| 14 | SA2 | I don’t think the more advanced technologies, the better educational quality. We also need to consider the acceptance of students and instructors. For example, they may not be used to the advanced technologies. | I-per-ela |
| 15 | SA4 | Yes… we need the right technologies rather than all technologies, which may vary from course to course. | P-per-exp |
| 16 | SA1 | Yes, I think technology is just a tool. It still depends on how the instructor use this tool reasonably for different students. For example, when the instructor provides communication tools in class… if there is no proper guidance, the efficiency of discussion would be reduced for some children. At this time, technology doesn’t play a positive role but a negative role. | P-per-ela |
| 17 | SA4 | But there are many ways to adapt to different students by referring to the Internet, resource libraries and so on. | P-per-ela |
| 18 | SA3 | Yes, it is true that technology can enrich instructional forms and stimulate students’ interest. However, from the perspective of technology, there are advantages and disadvantages, such as… Therefore, I think it is necessary to add a prerequisite, that is, the reasonable use of technology. With the correct guidance, technology is indeed helpful to provide a high-quality instruction. | P-per-ela |
| 19 | Ins | You just mentioned some factors, including instructor, student, and technology. Then we can further explore how to integrate these three dimensions in different learning environment. | IS-4 |