

WIP: East Asia Computer Science Students' Experiences Studying in Europe

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Abstract—This Research-to-Practice WIP paper investigates how East Asian students studying in Sweden encounter various challenges. We discuss the discrepancy between our and previous findings and give recommendations.

Background: Moving to and studying in a new country that is culturally different from their home country presents many challenges related to cultural differences to students.

Intended outcomes: This research aims to offer insights into how East Asian students adapt their learning strategies in Sweden and suggest how the university can support their lives and studies.

Research design: Six students were interviewed about their experiences studying in Sweden compared to studying at their home universities. Content analysis was performed to identify areas of interest.

Findings: We report initial findings specifically related to academic and sociocultural issues.

Keywords—*Computer Science, International students, Educational Setting, Case Study, Qualitative.*

I. INTRODUCTION

This Research-to-Practice) WIP paper reports on a case study of six East Asian students' experiences studying computer science at Swedish universities. Previous research has shown that international students face various challenges that require adaptation, for instance, 1) Personal psychological issues, 2) Academic issues, 3) Sociocultural issues, 4) General living issues, 5) English language issues [1].

The present study addresses the students' experiences from four perspectives, guiding the research questions. RQ1: How do international students adapt their communication styles in classroom settings in different cultural contexts? RQ2: What are the differences in the learning environments experienced by international students in their home country compared to studying abroad? RQ3: How do cultural differences in educational values impact the learning approaches of international students across diverse cultural settings? RQ4: How do international students' attitudes towards authority figures vary in educational systems and cultural contexts?

We employ semi-structured interviews for data collection and a qualitative analysis method combining deductive and inductive approaches [2]. As a theoretical lens, we discuss our findings in light of the categorization from previous studies, as exemplified in [1].

II. LITERATURE REVIEW

There are numerous articles related to studying abroad and international students, covering a broad spectrum of topics. Some studies take a national perspective, examining international students' economic and employment market impacts [3]. Others take the perspective of universities, the financial impact of international students on the universities [4], assessing the satisfaction levels [5] or exploring the psychology and social situations of those students studying abroad [6]. Further, some studies primarily focus on understanding the subjective thoughts of individual international students. These may explore motivations behind choosing to study abroad [7] and compare learning experiences with initial expectations [8][9]. In this study, we refine the focus within this direction, emphasizing adjustments in the study strategy.

Various studies are focusing on how international students adapt to cross-cultural settings. One study [10] examines the utilization and interaction of international students with Virtual Learning Environments (VLEs), which are extensively used in academic contexts. It underscores the challenges posed, particularly regarding the diverse student population's language, culture, and academic backgrounds within a predominantly monocultural environment. Another study [11] concentrates on differences in communication styles and the influence of English as a lingua franca. This study assesses the levels of adaptation based on the relationships formed by students in Indonesia.

Additionally, some studies emphasize the authority of teachers over international students [12][13] and their learning experiences [14][15]. Study [12] asserts that legitimate teacher authority is crucial for effective teaching, while [12] indicates cultural disparities in teacher authority between Eastern and Western cultures. Given that learning experiences are more subjective, we delve into the differences in educational values between Asia and Sweden.

III. METHODOLOGY

The study was performed at two universities in Sweden, at departments with several international master's programs.

A. Data gathering

The participants, international students from Eastern Asia, were contacted individually, either in person or by email, and asked if they were willing to participate in the study. We contacted ten students, six of whom accepted to

participate, here labelled A-F. Our participants include both female and male participants. The personal pronoun "they" will be used throughout to maintain anonymity. Student B and C are in their first year, and the rest are later in their studies.

The first two authors gathered and analyzed the data together. All authors discussed and agreed on the final analyses. We formulated four themes: Learning Environment, Communication Styles, Approaches to Authority, and Educational Values. The themes inspired the key interview questions and some follow-up questions. Semi-structured interviews can provide a balance between open-ended questions and some predefined directions, allowing for flexibility and in-depth exploration of participants' experiences, perspectives and opinions [16][17]. Our interviews were conducted this way, with discussions on the four themes.

The interviews were conducted individually. Each interview lasted around 50-60 minutes. With the consent of the participants, we recorded the interview process and transcribed the recording to text for further analysis. The recordings were deleted after transcribing. This way, we could capture sufficient information and data from the interview while respecting the participants' privacy.

B. Analysis

A qualitative analysis combining deductive and inductive methods was employed to analyze the data [2]. We categorized the data deductively according to four themes based on a literature study. These themes are in line with our research questions. All student quotes that fit each theme were thus put in separate files. After that, we adopted an inductive approach to analyze the four categories into sub-categories qualitatively. This comprehensive process ensures that our research aligns with the predetermined themes and emphasizes the importance of staying close to the data [18][19]. Through multiple readings, we identified similarities and recurring themes in the data, which led us to create initial categories. We went through several rounds of review to ensure the categories can accurately reflect the gathered information. We reached the final categories after multiple discussions with all authors and revisions.

IV. RESULTS

A. Learning Environment

1) *Facilities of the university.* During the interview, the four participants from [university 1] shared their unanimous feeling that there were noticeable disparities in hardware facilities between Swedish universities and their home universities. The disparities encompassed aspects such as the layout of classrooms and the decoration of study areas. However, the impact of these hardware differences on their learning outcomes varied among the participants.

Participants D, E, and F said that they initially sensed these dissimilarities, but with time, they paid less attention to them. Participant A believed these hardware facilities could have a subtle, long-term influence on their learning habits. A described a classroom layout which encouraged more active participation among students and emphasized that comfortable and well-lit study areas motivated students to come to campus for study, even outside class. A said:

"You know, the winter in Sweden gets to me when I sit alone in my room studying for hours. During winter, I prefer to stay on campus longer, and the relaxing and open atmosphere there really helps me focus and be productive with my studies."

In the meantime, participants B and C, from Eastern Asia universities, expressed no significant disparities in hardware facilities compared to their home universities.

2) *Online platforms.* Regarding the IT systems and student accounts, D and E noted that two platforms exist alongside websites developed for specific courses. The initial acclimation to these platforms can be difficult and time-consuming. B expressed that they had heard of instances where fellow students missed the deadline for registering for a final exam during the first semester because of this.

Conversely, the remaining three participants, A, C, and F, believe that the Swedish student IT platform provides good convenience when accessing information.

Education system. Both universities operate on a system of two periods per semester, resulting in four periods with exams per year. Differently, the students' home universities employed a two-semester structure, with final exams only at the end of these semesters. Moreover, after the end of the autumn semester, there is a more extended winter break.

Five participants, except B, unanimously perceive this difference as a significant challenge. They collectively assert that there were two semesters and only two exam weeks per year throughout their previous education. Because of the four periods in Sweden, particularly the final exams associated with the first period, it is difficult to prepare well. As they continued to adapt to their new surroundings within the first two months, they were immediately burdened with the task of preparing for final exams. C mentioned that when arriving in a foreign country, students have to deal with various daily life matters that demand a substantial amount of time in addition to academic responsibilities. C said,

"During the exam week of the first period, I locked myself in my room and studied non-stop from morning till night. It was intense, and there were moments when I felt so overwhelmed that I couldn't even catch my breath."

Nevertheless, A expressed that they had grown accustomed to this rhythm by their second year. These challenges included insufficient time to prepare for the final exams of the first period, balancing preparation for the second period's final exams during the Christmas break, and immediately transitioning into the third period after that. They believed this condensed schedule presented an unprecedented experience for them.

B. Communication Styles

1) *Interaction during class.* All participants agreed that distinct disparities exist in the interactive modes and communication atmosphere compared to their undergraduate study. In their home universities, the predominant pedagogical approach is the teacher delivering lectures, while students essentially assume passive roles, attentively absorbing the content. Conversely, nearly all courses in Sweden incorporate numerous interactive sections, necessitating active student engagement during class.

Participants D and F acknowledged the undeniable advantages of participating in such interactions. However,

they also noted that during the first period, when their spoken English proficiency was not yet fluent enough, participating in discussion-intensive settings such as seminars can pose challenges in articulating their viewpoints. Consequently, they tend to initially listen to the viewpoints expressed by classmates within their group. On the one hand, this grants them access to additional information from their peers' insights. On the other hand, it allows them ample time to organize suitable oral expressions that can better convey their viewpoints.

2) *Interaction after class.* Group assignments form a significant portion of the curriculum at both universities, a notable distinction to their Asian institutions. Diverse perspectives exist regarding this disparity. Participant E asserts a positive stance, highlighting the value of studying and discussing with fellow group members. However, C mentioned an unpleasant experience with some irresponsible group members, expressing a preference for independent assignments if given the choice.

A, B and F adopt a neutral standpoint towards group assignments, acknowledging finding inspiration and learning from one another and the opportunity to produce high-quality projects together. However, they also mentioned negative experiences, such as some group members being unreliable. D noticed how active discussions during group meetings often did not lead to consensus and clear next steps.

C. Approaches to Authority

Almost all students claimed that teachers in Asia tend to carry more authority. F described feeling fearful of asking the wrong questions or being hesitant to raise doubts about what the teacher said. A felt they involuntarily became very compliant. F said, "If you ask the wrong question or one that's fundamentally off, the teacher won't outright address it linguistically... but you can tell by the teacher's expression that they're thinking, 'Why would you ask such a question?'"

On the other hand, D claimed that in their past learning, they encountered many teachers with whom they could befriend and chat casually. However, in Sweden, due to the nature of the selected courses, the teachers only appeared for the first part of the course. Teaching assistants lead the latter part. As a result, they did not feel a significant difference in the authority of the teachers. In Sweden, the students expressed that teachers are more like friends and welcome students to present opposing theories in class. This environment encourages them to be more willing to raise questions or express themselves, yet they still refrain.

However, despite differences in authority between Asia and Sweden, half of the students felt it did not affect their willingness to learn or the learning outcomes.

D. Educational Values

1) *Teaching objectives.* All students share a similar perception: in Asian education, teachers tend to instruct students on various practical technical operations, while in Sweden, they present scenarios and encourage students to contemplate how to solve problems.

D described Asian teachers as thoroughly teaching how to use various tools; later, when confronted with a situation that needs resolution, students must choose the tools they learned to solve the problem. On the other hand, Swedish teachers let

students encounter a situation and figure out how to solve it while learning to use the necessary tools independently.

F points out that " (Asian) teachers focus more on that... technique..."

" (Asian) education is a bit like, it can train you very well to be, um, someone who can do this project very well, but your ability for self-directed learning might not be as strong," said E.

When asked about their preference for teaching objectives, B feels there is not much difference because they always try their best. F believes that fostering the ability for self-directed learning would be more beneficial for long-term development, but it requires a lot of effort to complete the courses. They still tend to focus on Asian-style teaching objectives.

Learning targets. E and F both feel that Asian education tends to be exam-oriented, where students focus on knowledge that might appear on the exams. Consequently, students often read past exam papers, sometimes memorizing them for the test. In Sweden, students need a thorough understanding of the principles to pass exams, as relying solely on past exam formats is ineffective.

B highlights concern regarding Sweden's retake examination system for international students. The scheduling of retake dates outside visa deadlines necessitates a stronger focus on maintaining good academic performance to avoid the need for retakes.

D prefers the mid-term and final exam structure in Asian education, citing its assistance in tracking progress and fostering a continuous learning approach.

V. THE RESULTS IN CONTEXT

In this section, we will use the categorization of problems facing international students, which is presented below. The categorization is based on the literature review as a theoretical lens through which to discuss our results. The review is restricted to students studying in English-speaking countries. Since the language in the study programs discussed in this paper is English, and Sweden belongs to the same Western culture sphere as the countries in [1]'s review, we argue that it is an appropriate lens.

The study presented in [1] summarizes previous research on problems facing international students in five categories:

Personal psychological issues. This category is described as "Homesickness, loneliness, stress, depression, frustration, loss of status or identity, anxiety, confusion, etc." These issues appear in several of our themes, but mostly when the students described their first months in Sweden, struggling with the four-period system. Another frustrating aspect is the Swedish climate, which one student managed using the "cosy atmosphere" on campus. Still, we do not find the most severe aspects presented in [1], like loss of identity.

Academic issues are described as "Academic progress, academic demands, lack of understanding of the [country] educational system, lack of effective learning skills for gaining academic success, difficulties in using educational, supportive services (e.g. library, academic counselling services), etc." Much of our students' comments are related to this category. Examples are the problems in the Swedish four-period study system and group, differences in the exam's target, Sweden's more active learning approach, and teaching

objectives, meaning focusing on learning tools or learning to problem-solve. Again, most of the issues mentioned occurred in the initial months in Sweden, and the students seemed to be accustomed eventually.

Sociocultural issues. [1] discusses this in terms of "Cultural shock, cultural fatigue, stereotyping, prejudice, racial discrimination, difficulties in adjusting to new social/cultural customs, norms and regulations and participating in intercultural/social activities, relationship problems, etc." Comments from our students in this category include differences in communication style, exam regulations, group work activities, teachers' communication style, and teachers' authority. None of our students mention prejudice or racial discrimination.

General living issues. This category involves "Accommodation difficulties, difficulties in using student support services, financial stress, dietary restrictions, safety threats, etc." The issues our students mentioned are initial problems using the learning platforms and problems coping with the darkness and cold in Sweden. Many of the mentioned issues do not appear in our data.

English language proficiency is described as "Difficulties in communicating with native speakers, understanding lectures, writing essays, etc." Again, this seemed challenging primarily in the beginning when some students had problems understanding and expressing themselves in English, which is expected in group work and seminars.

The results in [1] are inconclusive, possibly due to the included studies conducted in different countries, study areas, etc. Still, they summarize the most salient findings: "English language proficiency, financial problem, academic progress and homesickness."

Our results, on the other hand, mostly fall into the categories of academic and sociocultural issues. Particularly noticeable are differences in academic atmosphere and approaches to teaching and learning. These Sociocultural issues are more salient in our study. We can only speculate why. Since our study was performed ten years after [1], we propose that as the world has become more international, students, in general, might know more about other countries and cultures and thus face less stress and frustration. However, more research is needed to answer these questions.

VI. DISCUSSION

This section presents some salient differences between East Asian and Swedish education expressed by our students.

Our students claim that East Asian education is more focused on practical application, while Swedish teachers are more focused on students learning how to learn. Swedish teachers mention a concept in class, and the rest of the knowledge will be acquired independently, which is also reflected in exams. In Asia, teachers teach various topics and explain all concepts, but the students do not need to understand them all to pass the exam. In Sweden, teachers will teach fewer concepts, but the student must master these concepts to pass the exam.

While most students find autonomous learning and interaction effective in grasping abstract concepts and applying knowledge across various situations, they also perceive this learning method as exhausting and still reminisce about the simplicity of traditional lecture-style teaching.

The international students seem to retain previous learning habits regardless of how long they've been in Sweden. For example, everyone agrees that the Swedish classroom atmosphere encourages questions or thoughts without fear of judgment from teachers and peers. However, most people still admit that, despite this, they are hesitant to ask questions or voluntarily raise their hands to express their ideas during class.

VII. LIMITATIONS

This case study includes six East Asian students studying at two Swedish universities, limiting the results' transferability. However, most results are in line with previous research. The new insights presented here might apply only to these two universities or only to students from East Asia.

Further, the study focused on four themes. Other issues that are more meaningful to international computer science students studying abroad may thus not have come to light.

VIII. CONCLUSIONS AND RECOMMENDATIONS

This project analyzed the experiences of six international students studying computer science in Sweden. We specifically notice differences in academic atmosphere and approaches to teaching and learning.

Sweden's four periods per year often caused anxiety and stress among the students towards the end of the first period. We suggest universities offer guidance and support to international students on handling this, for example, by inviting alumni to share their learning experiences and provide them with insights on how to address it effectively.

International students often face challenges related to language proficiency due to the discussion-oriented culture in Sweden's educational system. This can result in students displaying a more passive attitude during classroom discussions or group work. It is suggested that teachers give students additional thinking time, such as allowing other students to speak first and waiting for students to organize their thoughts before expressing themselves. Repeating questions once or twice or supplementing them with explanatory sentences can also help students engage more effectively in discussions.

Regarding group assignments, students usually take three courses each period, often leading to 8-12 collaborative group assignments within two months. International students with limited experience in group assignments may struggle to adapt swiftly within a brief timeframe. In light of this, the universities could consider organizing voluntary activities to assist students in acclimatizing to this learning approach. Further, teachers should be aware that some students may not actively participate in forming groups. Still, they can address this by assigning groups or using class time for students to find suitable team members.

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REFERENCES

- [1] H. Wenhua and Z. Zhe, "International students' adjustment problems at university: A critical literature review," *Academic Research International*, vol. 4, no. 2, p. 400, 2013.

- [2] Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1), 107–115.
- [3] P. A. Nilsson and N. Ripmeester, "International student expectations: Career opportunities and employability," *J. of Intern. Students*, vol. 6, no. 2, pp. 614–631, 2016.
- [4] E. Marshall, "Cash-short schools aim to raise fees, recruit foreign students," *Science*, vol. 307, no. 5710, pp. 656–656, 2005.
- [5] H. T. Bui, C. Selvarajah, and D. G. Vinen, "The role of student–university value alignment in international student acculturation in australia," *International Journal of Intercultural Relations*, vol. 84, pp. 142–154, 2021.
- [6] C. Montgomery and L. McDowell, "Social networks and the international student experience: An international community of practice?" *Journal of Studies in International Education*, vol. 13, no. 4, pp. 455–466, 2009.
- [7] A. Berglund, N. Thota, and Y. Man, "The sino-swedish master programme in computer science and software engineering," *FICAP-1 Proceedings: Collaborative Academic Programs as a Contribution to Developing Nations*, p. 37, 2013.
- [8] P. B. Sarbari Bordia, "What do international students really want? an exploration of the content of international students' psychological contract in business education," *Studies in Higher Education*, vol. 44, no. 8, pp. 1488–1502, 2019.
- [9] A. Berglund and N. Thota, "A glimpse into the cultural situatedness of computer science: Some insights from a pilot study," 2014 International Conference on Teaching and Learning in Computing and Engineering, pp. 92–99, 2014.
- [10] L. Habib, M. Johannesen, and L. Øgrim, "Experiences and challenges of international students in technology-rich learning environments," *Journal of Educational Technology & Society*, vol. 17, no. 2, pp. 196–206, 2014.
- [11] S. Puumala et al., "International students' perceptions on their adaptation to indonesia and their intercultural relationship development: special focus on differences in communication styles and the role of english as a lingua franca," 2015.
- [12] C. Lai, M. Gu, and J. Hu, "Understanding legitimate teacher authority in a cross-cultural teaching context: pre-service chinese language teachers undertaking teaching practicum in international schools in hong kong," *J. of Edu. for teaching*, vol. 41, no. 4, pp. 417–434, 2015.
- [13] T. Li, "Comparison of american and chinese college students' perception of instructor authority," *Journal of International Students*, vol. 2, no. 1, pp. 116–122, 2012.
- [14] J. Shaftel, T. Shaftel, and R. Ahluwalia, "International educational experience and intercultural competence," *Int. J. of Business & Economics*, vol. 6, no. 1, pp. 25–34, 2007.
- [15] P. Ninnes, C. Aitchison, and S. Kalos, "Challenges to stereotypes of international students' prior educational experience: Undergraduate education in india," *Higher Education Research & Development*, vol. 18, no. 3, pp. 323–342, 1999.
- [16] D. L. Segal, F. L. Coolidge, A. O'Riley, and B. A. Heinz, "Structured and semi-structured interviews," *Clinician's handbook of adult behavioral assessment*, pp. 121–144, 2006.
- [17] M. A. Nuzhat Naz, Fozia Gulab, "Development of qualitative semi-structured interview guide for case study research," *Competitive Social Science Research Journal*, vol. 3, no. 2, p. 42–52, 2022. [Online]. <https://cssrjournal.com/index.php/cssrjournal/article/view/170>
- [18] J. M. Morse and C. Mitcham, "Exploring qualitatively-derived concepts: Inductive—deductive pitfalls," *Int. J. of Qualitative Methods*, vol. 1, no. 4, pp. 28–35, 2002.
- [19] U. H. Graneheim, B.-M. Lindgren, and B. Lundman, "Methodological challenges in qualitative content analysis: A discussion paper," *Nurse Edu. Today*, v. 56, pp. 29–34, 2017.