Priority Factors to Support the Adaptive Mentorship Model in Higher Education

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***Abstract*—In higher education, student mentors' support significantly improves students' confidence, satisfaction, and productivity and facilitates their personal and academic growth. This research aimed to determine the accompaniment factors that students at Tecnologico de Monterrey (Mexico) perceived as most significant to propose a mentoring model that adapts to each student by considering their progress in the academic program. To achieve this, we collected data from 1,686 students employing a Likert-scale assessment instrument whose reliability was proved by Cronbach's alpha coefficient. The results indicated three factors that students identified as priorities of the student mentor's work: their support in enriching their professional career (curriculum studied), their ability to solve problems related to student life, and their ability to listen and be emotionally available. The main development avenues of the student mentor were identified as knowing and connecting the university's student life activities according to the individual's interests, knowing the areas of development of the academic program, and having counseling skills.**

***Keywords*—adaptive mentoring, educational innovation, higher education, student mentor, TEC21 educational model**

I. Introduction

The TEC21 Educational Model performed at Tecnologico de Monterrey, Mexico, aims to develop comprehensive training for students, allowing them to face the challenges posed by a changing world, in which accompaniment is fundamental to enhance their formative development [1–3]. This accompaniment is managed by a student mentor, who aims to promote a memorable university experience for the students, boost their leadership skills, and promote their integral development in all areas of well-being [4].

The term mentoring is related to a set of faculty-student, staff-student, or student-student interactions. Several reports and practical studies found that these interactions are often planned at an organizational level rather than considering the student, the mentor, or their interaction. Despite the above, mentoring is a positive and accepted mechanism to influence students positively.

Student mentoring is an activity that has significantly evolved over the past decade. The first models of student mentoring were characterized by a unidirectional flow of information from the mentor to the student. However, this concept has evolved into a more flexible model where the objective is that the student is involved in managing their learning to develop their skills and become the person they want to be [5]. Fig. 1 shows the elements considered most effective in student mentoring according to the current literature [6–10], which has contributed to delineating and establishing a frame of reference related to accompanying a student mentor.

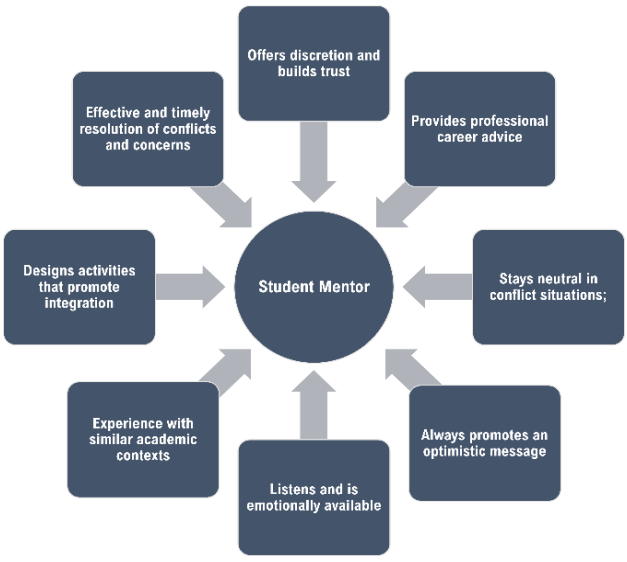

Fig. 1. Influential factors in the work of a university student mentor.

Although these factors are considered to have the most influence on the performance of the student mentor in an accompaniment model, in practice, it has been observed that these could be limited; therefore, it is necessary to complement them with contextual competencies that are "avenues of development". These increase the probability

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of success in the activity of the student mentor in their objective of supporting and promoting university students' personal and professional growth. Fig. 2 shows the development avenues in student accompaniment to help a student mentor deepen and improve their mentoring skills [11–14].

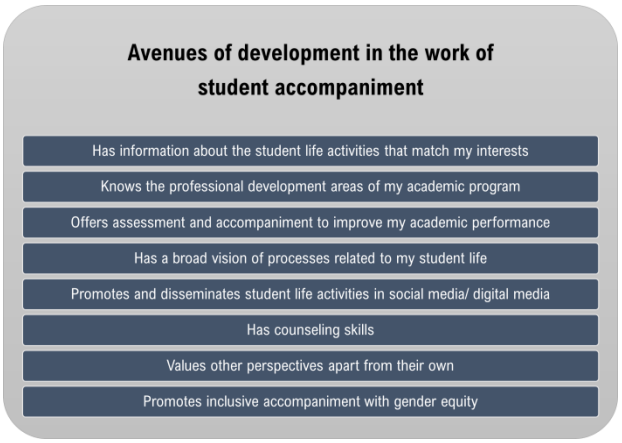

Fig. 2. Avenues of development in the work of student accompaniment.

Despite the elements mentioned above, within the current literature, several studies report a lack of consensus on the essential and contingent attributes that allow a formal definition of tasks and models to carry out an effective accompaniment. This can result in the student mentoring activity being perceived as unproductive or deficient by students.

Thus, this research determines the most significant factors in student accompaniment and the skills or avenues of development in which a student mentor should focus in the accompaniment process, all the above from the perspective of the students of Tecnologico de Monterrey under the TEC21 educational model. To measure the students' perceptions, we designed an evaluation instrument consisting of an online questionnaire divided into two sections. The first section is focused on detailing the profile of the students to acquire statistical data, and the second section consists of 16 questions, eight regarding effective accompaniment and eight about the characteristics of the development avenues. The questionnaire items employed a Likert scale, and Cronbach's alpha coefficient determined its reliability.

The results define guidelines and good practices associated with improving the effectiveness of accompaniment by a student mentor. The three factors that the students identified as priorities of the student mentor's work were detected, as well as the main avenues of development. Assuming that mentoring is a helpful guiding strategy in college, it becomes essential to determine which factors are most valued by students and analyze whether these factors change or differ significantly from a generational perspective. This is because one of the objectives is to use this information to propose a mentoring model that adapts to each student considering their progress in their academic program.

II. Methodology

The technological platform used to create the evaluation instrument was Microsoft forms. The evaluation instrument was divided into two sections. In the first section (statistical), data were obtained, such as the year of enrollment, the gender with which the students identify, the area of academic major, and the semester of the student. In the second section, a questionnaire was designed which contains items based on an ethnographic methodology and is supported by the authors' fieldwork because they are immersed in the role of student mentoring and observe daily the problems and requirements of the students regarding accompaniment [15, 16]. This second section is further divided into two groups of questions related to effective accompaniment and mentor' avenues of development. In this section, the student assigned a score on the Likert scale to indicate the factors with the highest and lowest priority.

Regarding the development of the research, a quantitative, descriptive methodology was used [17] since the goal was to thoroughly and precisely describe the factors and avenues of development that are most significant for the students. The evaluation instrument was applied to 1,686 students currently studying under the TEC21 Educational Model, representing 11% of student population on the Tecnologico de Monterrey, Campus Monterrey, in the August-December 2022 semester.

The evaluation instrument was implemented in the session of self-diagnosis and reflection developed at the end of the semester within the TEC21 educational model, which is called "week 18", with a duration of two hours. This session was divided into two parts: first, the session focused on issues of self-diagnosis and reflection on students' academic performance during the AD22 semester; in the second part, the access for students to the digital evaluation instrument (questionnaire) was shared. Fig. 3 shows some groups of students answering the evaluation instrument during the self-diagnosis and reflection session.

Fig. 3. Application of the assessment instrument to students of A) semesters 1–2, B) semesters 3–4, C) semesters 5–6, and D) semesters 7–8.

The complete questionnaire, i.e., the second section of the evaluation instrument can be seen in Table I. The results obtained were subjected to a statistical analysis through the calculation of Cronbach's alpha coefficient to determine the reliability of the evaluation instrument,

finding a value of 0.897, which is adequate because the minimum admissible value for this coefficient is 0.70.

TABLE I. EVALUATION INSTRUMENT

Effective accompaniment	**TD**	**D**	**N**	**A**	**TA**
1) Designs student life activities that help my integration into the community.					
2) Effectively and timely resolves conflict situations and/or concerns.					
3) Offers discretion and builds trust.					
4) Provides advice to enrich my career.					
5) Always remains neutral in conflict situations					
6) Has experience with similar scholastic contexts					
7) Has excellent listening skills and emotional availability.					
8) Always promotes an optimistic message.					
Avenues of development					
1) Has information about student life activities that match my interests.					
2) Knows the professional development areas in my academic program.					
3) Offers advice and accompaniment to improve my academic performance					
4) Has a broad vision of processes related to my student life (procedures and management).					
5) Promotes and disseminates student life activities in social media / digital media.					
6) Has counseling skills.					
7) Values perspectives apart from their own.					
8) Promotes inclusive accompaniment and gender equity.					

TD = Total Disagree, D = Disagree, N = Neutral, A = Agree, TA = Total Agree

III. RESULTS AND DISCUSSION

The statistical results obtained from the first section of the evaluation instrument reveal that the sample of 1686 students comprised 958 identifying as male (57%), 693 as female (41%), and 35 as non-binary (2%).

The students evaluated range from 18 to 23 years old. Regarding the distribution of academic programs in which the respondents were enrolled, 110 students from the School of Built Environments participated (6.5%), 761 students from the School of Engineering and Sciences (45%), 88 students from the School of Law, Economics, and International Relations (5.5%), 202 students from the School of Creative Studies (12%), and 525 students from the School of Business (31%). The distribution of the students surveyed according to the semester they were studying can be seen in Fig. 4.

The results acquired from the second section of the evaluation instrument were grouped by the success factors in effective accompaniment and the avenues of development. Fig. 5 shows a frequency analysis of the accompanying factors according to the students' perceptions. It can be seen that 484 of the students fully agreed that providing advice to enrich their professional careers was the most valued factor in the student mentor's effective accompaniment; in this case, only 35 students expressed themselves negatively.

In contrast, the questionnaire responses indicated that designing student life activities to promote interaction within the community was a low priority; only 75 students fully agreed that it was an effective factor in the student mentor's accompaniment, and 521 totally disagreed. Although the student mentor's role includes the promotion of a memorable university experience, it does not mean this is considered in the design and implementation of activities. In some cases, the student mentor does open communication channels and impacts a student-life event, participating in the activity does not significantly impact the accompaniment of the student in their professional training.

Therefore, it is inferred that the functions and actions of the student mentor oriented towards these factors help to strengthen trust (mentor-student partnership), which allows students to work on their life purpose and focus on enriching their professional careers; also, accompaniment is effective when the mentor can resolve conflict situations, be an active listener, empathize when the student goes through something complex or challenging, and selflessly provides support, encouragement, and genuine apprehension for the students' experiences.

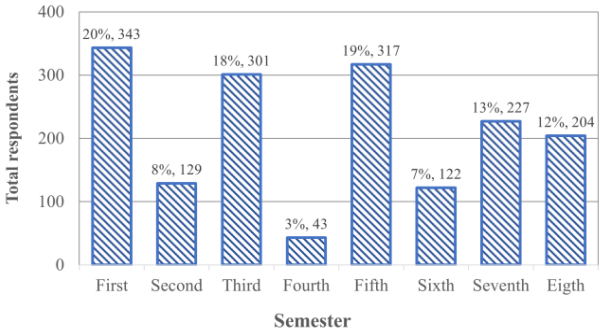

Fig. 4. Distribution of students surveyed in the semester they were studying.

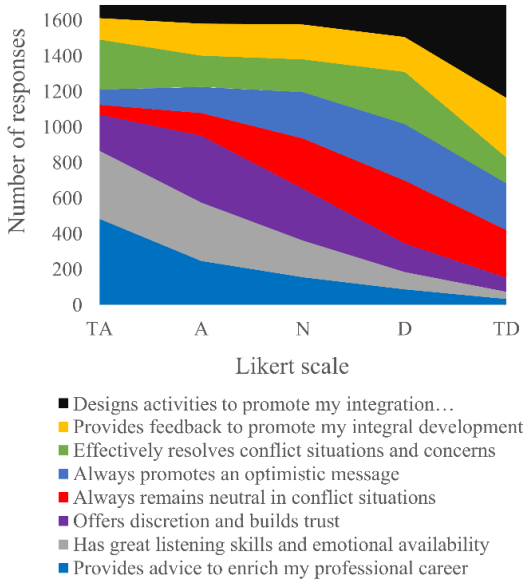

Fig. 5. Analysis of the relevance of success factors in the accompaniment of students.

Fig. 6 shows the results obtained related to the avenues of development that the student mentor should consider strengthening the development of their competencies in accompaniment. The horizontal axis represents the Likert scale; the vertical axis indicates the frequency of student responses corresponding to the avenues of development in the different choices of the Likert scale items.

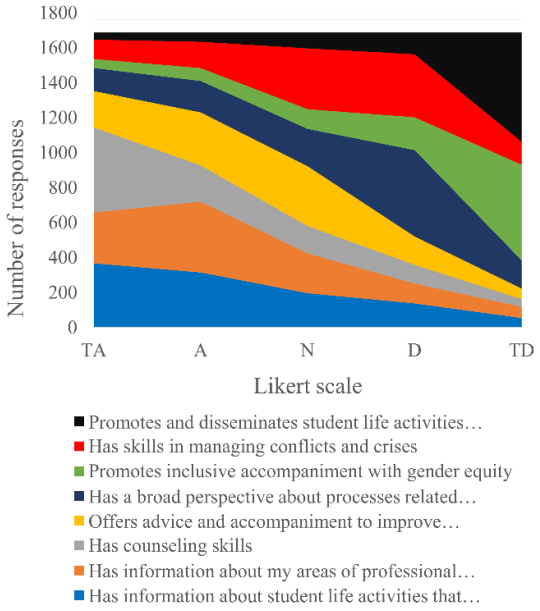

Fig. 6. Analysis of the avenues of development of student accompaniment.

A cross-sectional analysis allowed us to note the frequency with which students relate each development avenue to the Likert-scale item choices. In summary, the three primary avenues of development that students consider relevant for strengthening the student mentor's accompaniment are a) has information about the student life activities that match my interests, b) knows areas of professional development in my academic program, and c) has counseling skills. These accounted for 68 percent of the "totally agree" opinions of the student sample. It is possible to conclude that the student identifies that providing information related to student life activities matching their interests, combined with knowing the areas of professional development, enables the mentor's ability to advise them on their interests. That is, it is not enough for the student mentor to know the detailed catalog of the student life activities within the institution (non-academic activities that supplement the student's profile). The most important thing from the student's perspective is that the mentor designs the most convenient options in a personalized way according to the student's characteristics and interests.

Similarly, it is possible to recognize that promoting and disseminating student life activities in social networks and/or digital media is not an area considered highly relevant in the mentor's accompaniment of the student, even if maintaining digital media is a form of communication that is considered efficient for students of this generation. It is not a practice that ensures the success of bringing the student mentor closer to the students of their community. It may possibly also be established that the student does not wish to link a formal accompaniment activity in a context they consider private.

Based on the results provided by the students, the main challenge is to enhance their professional development in real scenarios and not limit them to focus on academic success. Below is a more detailed analysis that allows us to know if these factors outgrowth according to the student's academic progress.

Fig. 7 shows a generational comparison of the success factors in accompanying students. It can be observed that providing advice to enrich the student's professional career is a factor considered highly significant among first-to-third and sixth-to-eighth-semester students, and discretion and trust building is vital to students in the first semesters because it is there where it is possible to develop a bond that lasts throughout the student's academic training. The above shows that building a bridge of trust in the students' first semester is critical because, in this stage, it has more priority than in the closing semesters of the academic program. On the other hand, providing feedback to promote integral development is a factor of greater relevance for students in the last year of their professional careers.

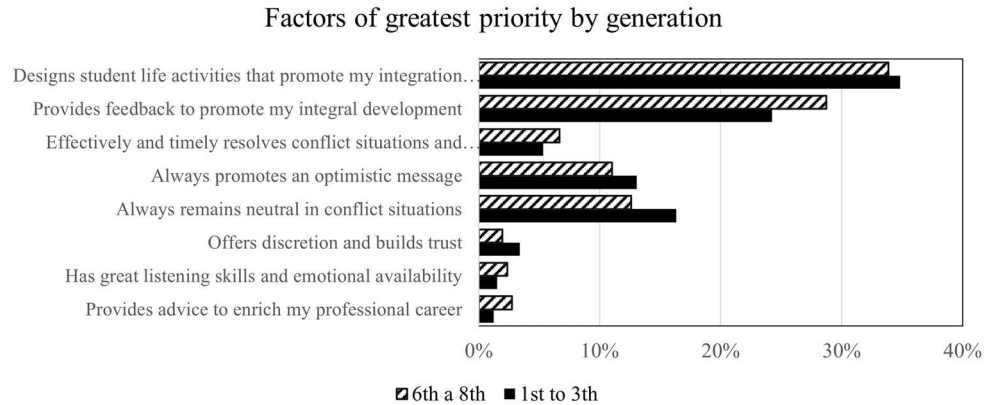

Fig. 7. Factors of greatest priority, grouped by generation.

These findings show the need to focus the accompaniment work on enriching the student's professional career, not only in the academic field but also to ensure their memorable experience by bringing personalized information based on the student's profile. Also, the student mentors must know the different strategic areas that help their accompaniment, such as the center for professional networking and development, the student life activities, and the student groups, to ensure that they have the necessary information about the activities and processes, which favors the durability of the bonds created with the students.

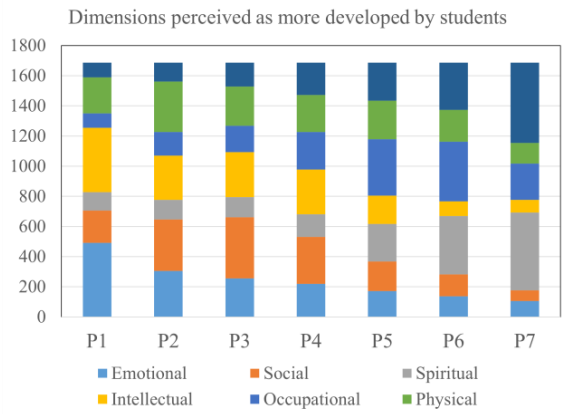

Fig. 8. Dimensions of well-being in the TEC 21 educational model.

Finally, Fig. 8 presents relevant information related to the dimensions of well-being focused on the comprehensive support of students in the TEC 21 educational model. This analysis demonstrates that the emotional dimension is one of the most important, receiving a higher degree of support from the student mentor. On the other hand, the spiritual dimension is one of the areas where the student mentor has a significant impact on support. Therefore, it is interesting to determine in which dimensions of well-being students experiment higher support from the mentor, as well as identify the dimensions in which the mentor should focus their efforts to enhance the holistic development of students.

It is important to note that the emotional, intellectual, and physical dimensions are areas where the mentor effectively influences, providing solid support to the students. However, the spiritual, financial, and occupational dimensions are areas where mentors have not been able to adequately complement the holistic development of the students.

IV. Conclusion

The results of this study allowed us to identify the most influential accompaniment factors of a student mentor valued by the students coursing the TEC21 educational model. These serve as a reference to guide new actions to improve the profile and continuously update the tools that enrich the mentor's accompaniment work and fulfill the purpose of forming students integrally.

In this framework, with the above-mentioned attributes, we confirmed the profile and the factors most valued by the students. The competencies were linked with the respective essential knowledge (being, doing, knowing) that promotes the development of the student mentor. Regarding "being", it is related to the affective or cognitive personal disposition that mobilizes a specific behavior and is at the basis of knowledge and know-how.

Students expect their student mentors to have sufficient skills to provide advice that enriches their professional careers. In this sense, knowing the student life activities well is highly relevant for inviting the student to participate according to their interests, strengths, and weaknesses after an individual analysis of the profile that allows putting together a personalized day for each young person.

Emphatically, the student mentors must recognize the academic program their students are studying to provide accompaniment, guidance, and advice and construct the best graduation profile for that career and generation, synergistic with any other active actor of the educational model related to academic issues.

The ability to resolve problems related to the processes inherent in the student's life is also highly appreciated, which implies that the student mentors must be adequately trained in these and have good listening and empathy skills, to attend not only procedural situations but also problems of an emotional and social nature, more complex in their form and substance. Student mentors must be available to establish dialogues that explore the student's emotions, contain crises, and channel effectively with other areas focused on integral well-being, meaning skills in psychological first aid. It is also essential that the mentors completely know the academic and general regulations of their educational institutions.

Finally, all this implies challenges for universities and those liable for accompaniment. The initial accompaniment must integrate a bond of trust that strengthens the relationship between the mentors and their students.

Several research studies record the benefits of mentoring for the participants. These effects relate to specific academic needs and depend on the population implicated in mentoring. Investigation is needed to find the nuances of mentoring and determine which groups can benefit most from each type of mentoring. Also, future work could focus on understanding unclear findings, describing more certainly what happens in mentoring relationships and how this affects specific groups, and examining the effects of mentoring on career stage.

Is important that higher education institutions should understand the results that student mentoring delivers, but even more valuable is truly acknowledging the how and why of student mentoring in the first place. This understanding provides insights into the application of this model to higher education. Then, once mentoring begins and mentors realize the importance of growing in this activity, they can pass on their mentoring knowledge and experience to others who are moving up the academic ranks, creating a continuous cycle.

In the search for the human flourishing of our students and the integral definition of the profile of the student

mentor that best contribute to the TEC21 educational model, the results of this research work invite university educators to use an adaptive model to improve the mentoring process in its respective configurations and then share the results. We believe that such collaboration can strengthen an adaptive model based on the needs of the students according to their academic advancement and help reinforce the overall effectiveness of the student mentor in delivering memorable experiences for our students and the holistic construction of their professional trajectories.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Antonio R. Ramos-Diaz led the execution of the entire research project and wrote the first version of the paper; Juan J. Franklin-Uraga conducted the research and was involved in collecting and managing the data; Lydia Velazquez-Garcia accomplished the data analysis, contributed some ideas and a section on the manuscript, and complete the paper review process; Antonio Cedillo-Hernandez directed the research orientation, supervise the learning outcomes and finalized the paper as to the required format; all authors had approved the final version.

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